

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



**BUDGET
ESTIMATES
FISCAL YEAR 2012**

CONGRESSIONAL SUBMISSION

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**Budget Estimates, Fiscal Year 2012
Congressional Submission**

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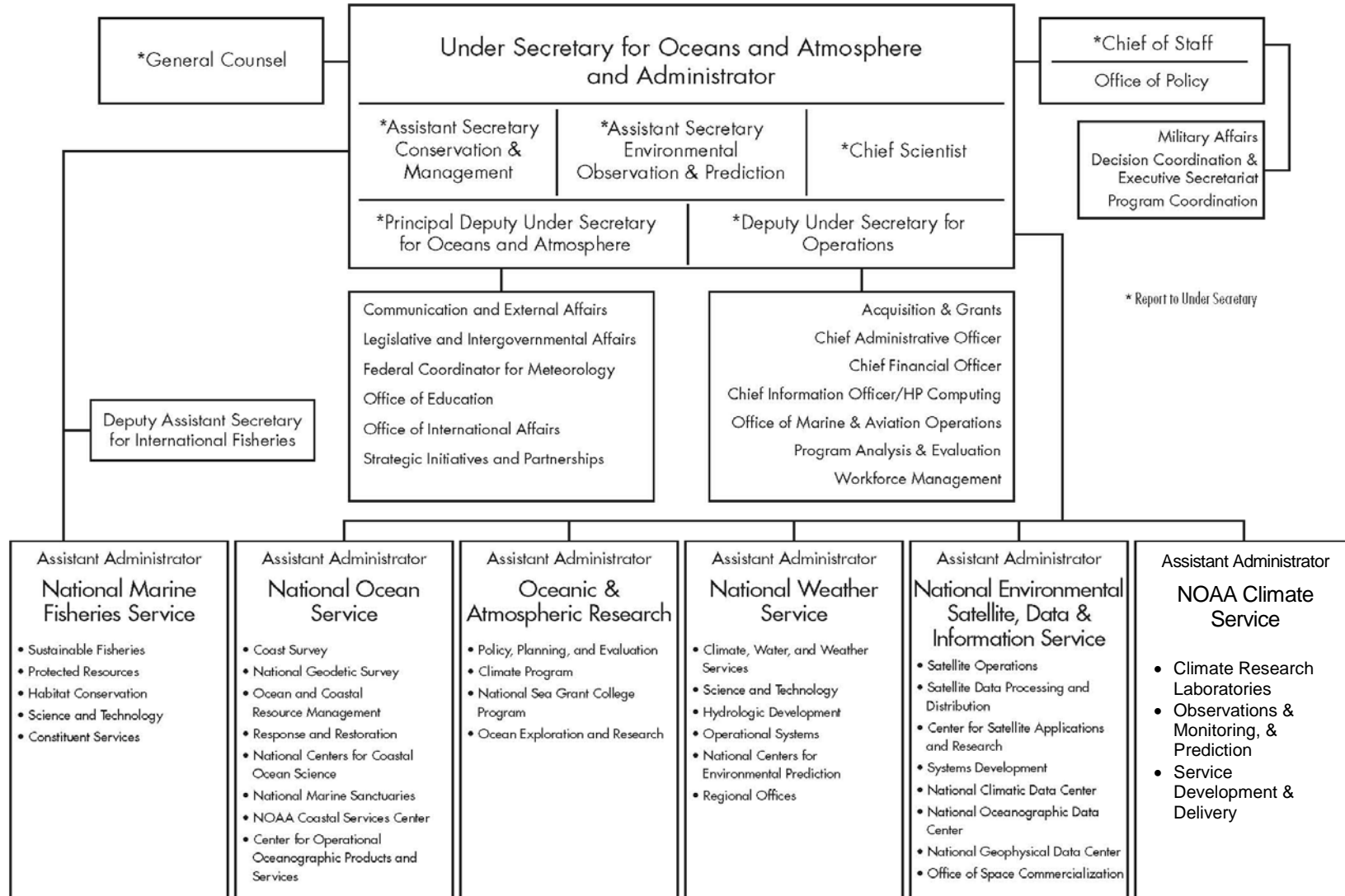
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U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
2012 Annual Performance Plan Formulation

FY 2012 ANNUAL PERFORMANCE PLAN (APP)
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

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Section 1: Mission Statement

To understand and predict changes in weather, climate, oceans, and coasts, to share that knowledge and information with others, and to use it to manage natural marine resources.

Section 2: Corresponding DOC Objectives

DOC Theme: SCIENCE AND INFORMATION

DOC Objective 13: Enhance scientific knowledge and provide information to stakeholders to improve innovation, technology, support economic growth and improve public safety

NOAA will expand and maintain a reliable and accessible suite of climate, weather, ocean, marine ecosystem, and living marine resource and geospatial information, to improve the understanding of key environmental processes — including occurrence and effect of high impact events — and build capacity in the social, behavioral, and economic sciences to support the valuation of ecosystem services, risk and vulnerability assessments, and decision-support services. NOAA will develop advanced technologies in sensors, computing and networking, and user interfaces to better observe, understand, model, and communicate knowledge of complex environmental systems, and promote existing and future scientific excellence and collaborations in its science workforce.

DOC Objective 14: Improve understanding of the US economy, society and environment by providing timely, relevant, trusted and accurate data, standards and services enabling entities to make informed decisions.

NOAA is increasing its focus on information management standards and strategies to improve access, interoperability, and usability. To achieve this objective, NOAA will continue to gather environmental data by developing, deploying, and operating systems to collect remote and in-situ observations, and manage and share data through partnerships and standards. NOAA will continue the planned development of the next generation of satellites to serve future space-based observations and provide data continuity; maintain and develop the next generation of research vessels and aircraft to serve multiple observation requirements; and assimilate and optimize use of the data from the varied observing systems.

DOC Objective 15: Enhance weather, water, and climate reporting and forecasting

The increasing concentration of people and businesses in weather-sensitive areas will elevate society's vulnerability to even small changes in environmental conditions. Hurricanes and tsunamis devastate coastlines with strong winds, surge events, flooding, debris flows, and infectious disease. Tornadoes take lives and property inland at a more local and unpredictable scale. Communities along rivers and other inland waterways face increasing disruption from more frequent and devastating floods, while others face the possibility of extreme drought, straining municipal water supplies and putting the sustainability of entire businesses and communities at risk. Winter storms could paralyze metropolitan areas for days. Space weather, predicted to peak over the next few years, can radically disrupt communications and electricity transmission. As society's vulnerabilities increase, environmental information—including forecasts and warnings—are integral to the safety and well-being of those impacted by sudden or prolonged events.

Over the long-term, climate change may increase the intensity and even the frequency of adverse weather events, ranging from drought and flooding to wildfires, storms and hurricanes. Changing weather, water and climate conditions affect locations of industries, and the development and generation of renewable energy, and the efficiency and safety of the U.S. transportation system. Trusted, timely environmental information is a key input into sustaining the nation's competitive advantage, expanding economic growth, and protecting lives and livelihoods. Achieving a weather-ready nation means that society will be able to

avoid the impacts of environmental events that affect safety, health, the environment, the economy, or homeland security.

DOC Theme: ENVIRONMENTAL STEWARDSHIP

DOC Objective 16: Support climate adaptation and mitigation

Natural and human-induced climate changes are at the forefront of any discussion of long-term trends and challenges facing the Nation and the world. Climate-related changes include increased global temperatures, melting sea ice, rising sea levels, increased frequency of extreme heavy precipitation events, increased acidification of the oceans, modifications of growing seasons, increased storm frequency and intensity, alterations in species' ranges and migration patterns, earlier snowmelt, increased drought, and altered river flow volumes. The impacts of these changes are regionally diverse and affect numerous sectors, including water, energy, transportation, forestry, coasts, fisheries, agriculture, ecosystems, and human health. A changing climate is projected to increase demand for water resources and exacerbate other human impacts on fisheries and marine ecosystems, such as over-fishing, habitat destruction, pollution, and excess nutrients in coastal waters. Sea level rise is expected to amplify the effects of other coastal hazards, and rising temperatures are expected to increase invasions of non-native species. Climate change can also have a direct impact on commerce, transportation and the economy. In the Arctic, retreating sea ice is providing access for regional oil and gas development, expanding commercial fisheries northward, and opening sea routes for commerce and tourism.

These changes have profound implications for society, underscoring the need for scientific information to aid decision makers in developing and evaluating options for mitigating anthropogenic climate change, as well as alternatives for adapting to a changing climate. While the nation has made significant progress in our understanding of climate, more work is needed to improve scientific understanding, produce accurate predictions, identify risks and vulnerabilities, and inform decision-making. No single agency can do this alone; climate science, assessment, service, engagement, and education efforts require and benefit from interagency, academic, and private sector partnerships. Building upon a strong scientific foundation and decades of engagement with stakeholders, NOAA will advance this long-term goal by deepening our scientific understanding of climate, developing authoritative climate assessments, developing and delivering climate services at global, regional, and local scales, and improving public knowledge of a changing climate and its impacts. Given its stewardship responsibilities and expertise, NOAA will focus particularly closely on the impacts of a changing climate on weather patterns, ocean and coastal ecosystems, living marine resources, and salt and freshwater resources.

DOC Objective 17: Develop sustainable and resilient fisheries, habitats, and species

Ocean and coastal resources are already stressed by human uses, and long term trends will create ever growing needs for effective management of these resources. Global demand for seafood will continue to increase fishing pressure on habitats and over exploited species, while concerns about the ecological sustainability and safety of seafood harvests will rise commensurately. Depleted fish stocks will mean loss of jobs and economic opportunities along the coasts. Extinction rates for marine species are increasing and biodiversity is decreasing. Concentration of populations along the coasts and Great Lakes will increase competition for marine resources, potentially leading to overexploitation and habitat degradation. Changing climate and weather conditions will create new challenges for sustainable resource management. Climate change impacts to the ocean—sea level rise, acidification, and warming—will alter habitats and the relative abundance and distribution of species.

Conservation and sustainable management of living marine resources requires an ecosystem approach that accounts for the complex connections between organisms (including humans), their physical and biotic

environments, and the wide range of processes that control their dynamics. It will require balancing the recovery of the marine environment and its living resources with sustainable use of those resources, and thus an understanding of ecosystem processes to provide a solid, scientific foundation for management decisions. By working toward sustainability of all species, for the present and future generations, NOAA will also ensure that seafood is a safe and reliable source of protein, and that seafood harvests and production can continue to provide economic opportunities for vibrant coastal communities.

DOC Objective 18: Develop Sustainable Coastal Communities and Economies

The complex interdependence of ecosystems and economies will grow with increasing uses of land, marine and coastal resources, generating economic and environmental pressures that bear particularly heavily on the nation's coastal communities. Maritime-dependent economies will expand in all EEZ areas and coastal economies will be highly dependent on safe and efficient transportation of people and goods. At the same time, they will be increasingly vulnerable to environmental disruptions, such as harmful algal blooms, that can weaken coastal economies and communities by killing fish and closing beaches. Shifting patterns in weather and climate will result in coastal communities, urban centers, and economic sectors relying more heavily upon geospatial and other environmental information. The nation's profound need for alternative energy solutions will result in more competition for land and ocean resources, adding additional challenges to sustaining environmentally and economically sustainable coastal and Great Lakes communities.

At best, our coasts can be vibrant, healthy and productive—a pillar supporting our national economic engine and our citizens' well-being. At worst they can be crowded, unproductive, dirty, and hazardous. Achieving NOAA's coastal goal will help to invigorate our coastal communities, support the productivity and diversity of our coastal and ocean ecosystems, and enhance our appreciation and the beauty of our nation's coastal areas.

Section 3: Priorities and Management Challenges

EXECUTIVE SUMMARY

Introduction

For Fiscal Year (FY) 2012, the National Oceanic and Atmospheric Administration (NOAA) proposes a budget of \$5,497.7 million, an increase of \$749 million or 15.8 percent over the FY 2010 enacted level. NOAA generates value for the nation through its understanding of and ability to predict changes in the Earth's environment and through conservation and management of ocean and coastal resources. This role is all the more critical given the economic, environmental, and societal challenges currently facing the nation. To better meet its mission, NOAA is first proposing a reorganization of its climate research, monitoring and services to consolidate these activities and establish a new Climate Service line office to better serve the public need for authoritative climate information and efficient service delivery. Along with this reorganization NOAA is proposing a variety of activities in the FY 2012 budget to support the Administration's economic and environmental priorities, including the National Ocean Policy. NOAA provides services vital to saving lives and livelihoods, allowing decisions to be made on a sound scientific basis. This request is the result of a rigorous review and prioritization of the agency's programs and activities. Low priority programs or activities have been curtailed or eliminated, core functions and services are sustained, and increases are requested for only the most critical programs, projects, or activities necessary to meet the growing demand for NOAA's services. These activities also support NOAA's role in achieving the Department's goals as outlined in the Balanced Score Card. The additional resources requested in this budget will improve NOAA's prediction of high impact weather and water forecasts, manage ocean and coastal resources, deliver safe, efficient, and environmentally sound transportation, and maintain and expand the technical infrastructure that supports NOAA's mission.

Within the request, \$75.0 million is required for Adjustments to Base (ATBs) to support inflationary costs. Net changes within the Operations, Research, and Facilities account represent a decrease of \$42.3 million and within the Procurement, Acquisition, and Construction account net changes result in an increase of \$703.7 million, for a net increase of \$646.7 million over the FY 2012 base amount, including NOAA's other accounts.

This request reflects the Department's effort to sustain the progress made in to enhance support for oceans, climate, and science. Two new White House priorities of particular interest are the National Ocean Council and the Climate Change Adaptation Task Force. Many of NOAA's core programs are critical to supporting these policy priorities. At the request level, NOAA can maintain its critical services and make necessary investments to address core infrastructure needs and key coastal management, fisheries, and climate activities.

Goals of the Program and Statement of Objectives

The NOAA budget supports DOC strategic goals including its goals outlined in the Balanced Score Card to: 1) generate and communicate new, cutting edge scientific understanding of technical, economic, social and environmental systems and 2) promote economically sound environmental stewardship and science and help drive the growth of blue and green businesses. In particular, this budget supports specific objectives related to climate adaptation and mitigation with the proposed establishment of a new Climate Service line office on par with the National Weather Service and other NOAA line offices. In addition, it supports coastal communities that are environmentally and economically sustainable with efforts to maintain and modestly enhance ocean and coastal resources.

Summary of Proposed Changes

NOAA provides services vital to saving lives and livelihoods, allowing decisions to be made on a sound scientific basis. The FY 2012 budget for NOAA preserves the Administration's environmental and economic priorities as established in the FY 2011 President's Budget, while also addressing concerns regarding the fiscally constrained environment in which we currently operate. This request sustains NOAA's climate programs, provides modest increases for fisheries and coastal management, and makes necessary investments in NOAA's core infrastructure of facilities, observing systems, and IT systems that are needed to maintain the level of services planned to be provided. The FY 2012 budget supports NOAA's role in achieving the Department of Commerce goals outlined above.

This budget maintains NOAA's core competencies in the following strategic priority areas:

1. Resilient Coastal Communities and Economies: Coastal and Great Lakes communities are environmentally and economically sustainable
2. Healthy Oceans: Marine fisheries, habitats, and biodiversity are sustained with healthy and productive ecosystems
3. Climate Adaptation and Mitigation: Establishing a NOAA Climate Service and an informed society anticipating and responding to climate and its impacts
4. Weather Ready Nation: Society is prepared for and responds to weather-related events.
5. Maintaining core infrastructure of facilities, observing systems, including the satellite continuity needed to support NOAA and the Nation's observing needs, IT systems and personnel

Resilient Coastal Communities and Economies

One of NOAA's key goals is to organize our resources and capabilities to promote the environmental and economic sustainability of coastal communities. Fifty percent of Americans live in coastal areas and sixty percent of the country's GDP is generated in these areas. Changes in fishing regulations and the emergence of new industries will change these communities in profound ways, and the Department of Commerce is poised to ensure these changes are positive. The Deepwater Horizon oil spill has further highlighted the importance of our coasts and the health of the marine environment on our society and economy, as well as the challenges posed by competing demands on our ocean and coastal resources.

Our nation's oceans and coasts are becoming crowded with increasing demand for energy, aquaculture, fishing, shipping, and non-consumptive recreational activities. Unmanaged, this trend can irreversibly impair healthy marine ecosystems and the ecological services they provide, and it pits one industry against another in finding the appropriate space to conduct their activity, leading to potential inefficiencies and reducing industry and job growth. New approaches, such as coastal and marine spatial planning (CMSP), will provide a comprehensive, integrated, ecosystem-based process through which marine uses are assessed and areas are identified that are most suitable for ensuring ecologically, economically, and culturally sustainable use -- and it is a primary focus of the Administration's National Ocean Policy. NOAA is positioned to provide information and tools to our regional and state partners to support CMSP nationwide.

NOAA's FY 2012 budget includes new investments of to support coastal communities and healthy ecosystems, including \$5 million to provide a dedicated source of funding to sustain and maintain Regional IOOS High Frequency radar stations, which map surface current measurements important for national defense, oil spill response, search and rescue missions, and marine transportation uses, among others. Also included are \$2.9 million for oil spill research, and \$1 million for integrated ocean and coastal mapping among other modest increases to support our coasts and ecosystems. The request also includes \$8 million for a national Working Waterfronts initiative to assist fishing dependent communities adversely affected by regulatory changes or environmental conditions transition to new ways of doing business within the limits needed to protect and rebuild coastal and ocean species and habitats. These increases in

support of the National Ocean policy are on top of the over \$2.0 billion in base resources that NOAA devotes to ocean and coastal activities that support the National Ocean Policy.

Healthy Oceans

The NOAA FY 2012 budget submission also seeks to preserve transformational changes in how fisheries and ecosystems are monitored and managed by the Department of Commerce. NOAA is proposing an additional \$15 million for expanded annual stock assessments -- the scientific basis for all of our fisheries management decisions. Other programs will increase our knowledge of the resource and, therefore, the effectiveness of catch allocation decisions -- including \$3M for improved recreational fishing surveys, and another \$3 million for species recovery grants. The budget also seeks to close data gaps for protected species conservation, with an additional \$2.5 million for critical protected resources stock assessments.

Climate Adaptation and Mitigation

Climate change is apparent now across our nation. Trends observed in recent decades include rising temperatures, increasing heavy downpours, rising sea level, longer growing seasons, reductions in snow and ice, and changes in the amounts and timing of river flows. These trends are projected to continue, with larger changes expected if heat-trapping gas emissions are not curtailed.

NOAA's FY 2012 request supports steps needed to improve our climate services, including the establishment of a Climate Service line office. NOAA needs to better understand and characterize the nation's vulnerability to climate change and its adaptive capacity to reduce that vulnerability. Building on the past two decades of experience, NOAA proposes a \$4.7 million increase for Carbon 14 measurements to capture the distribution of fossil fuel emissions across the U.S., and although decreasing the amount allocated to regional climate services from the FY 2010 Enacted level, provides \$3.1 million to support the regional climate services in the FY 2012. These investments build on prior year investments to provide NOAA with the initial capability to deliver climate services to the Nation.

Weather-Ready Nation

A weather-ready nation is a society that is able to prepare for and respond to environmental events that affect safety, health, the environment, economy, and homeland security. Urbanization and a growing population increasingly put people and businesses at greater risk to the impacts of weather, water, and climate-related hazards. NOAA's capacity to provide relevant information can help create a society that is more adaptive to its environment; experiences fewer disruptions, dislocation, and injuries; and that operates a more efficient economy. In FY 2012, NOAA proposes several increases to help ensure that our weather research and forecasting abilities stay strong and move into the future. With an increase of \$5 million to fully fund the purchase of GPS radiosondes for all 102 NOAA/NWS upper air observing stations, NOAA is doubling its investment in ensuring that data critical to improving weather models. \$11 million is dedicated towards transitioning NOAA's operational high performance computing to a new contract, as well as continuing regular improvements to our numerical weather prediction modeling. Finally, NOAA will be investing an additional \$26.9 million to fund the third year of planned Next Generation Air Transportation (NextGen) development activities, allowing for better integration of weather information into decision-making solutions for the Federal Aviation Administration -- potentially reducing the number of air delays for the travelers. While this effort will initially focus on aviation users, NextGen weather improvements have the potential to generate benefits across the weather forecasting enterprise.

Maintaining core infrastructure of facilities, observing systems, including the satellite continuity needed to support NOAA and the Nation's observing needs, IT systems and personnel.

The request includes necessary investments in core infrastructure including facilities, fleet, and information technology systems and security, along with key observing systems required for weather and climate observations. One of the greatest challenges facing NOAA today is ensuring continuity of satellite operations to provide unbroken coverage of weather forecasts and climate measurements into the future. NOAA and NASA have established a successful partnership to replace and update the existing GOES

series of satellites. The new satellites in this series will carry improved environmental instrument suites providing more timely and accurate weather forecasts and improved observation of meteorological events that directly affect public safety, protection of property, and economic health and development. NOAA also continues to work on the transition for the Joint Polar Satellite System (JPSS), and the request includes new initiatives for DSCOVR (\$47.3 million) and COSMIC-2 (\$11.3 million), satellites necessary to operationally replace aging observing platforms as well as an increase to the continued funding for Jason-3 of \$33.0 million. Finally, an investment of \$7.4 million in Enterprise IT Security will ensure that NOAA's systems are protected against ever-increasing cyber attacks.

NOAA's Reorganization Proposal for a Climate Service and Other Purposes

The FY 2012 Budget proposes several reorganizations that affect the NOAA budget structure. Proposed are:

- The establishment of a new line office, Climate Service
- Renaming of the National Environmental Satellite, Data, and Information Service (NESDIS) as the National Environmental Satellite Service (NESS)
- Other changes as described below

Provided are NOAA's current organization chart and the proposed organization chart. The FY 2012 budget is presented in alignment with the proposed organization chart.

Summary

In response to rapidly increasing demand for climate science and services from both the private and public sectors, NOAA's Fiscal Year (FY) 2012 Budget Request includes the reorganization of existing NOAA climate programs and activities under one Climate Service Line Office and other reorganizations for efficiency. The primary purpose of this reorganization is to enable NOAA to provide a reliable and authoritative source for climate data, information, and decision-support services and to more effectively coordinate with other agencies and partners. This reorganization will:

- neither increase or decrease the NOAA Full-Time Equivalent (FTE) or billet allocation, or require any relocation of employees;
- not require any physical relocation of programs or labs, or require any new facilities to accommodate this reorganization;
- result in a zero sum realignment of funds within the base NOAA budget;
- decrease the overall amount spent on overhead in NOAA; and
- locate the Climate Service headquarters in Silver Spring, MD.

The Need for a Climate Service

Every place on Earth is sensitive to changes in climate and weather. Up to one-third of the U.S. gross domestic product depends on accurate weather and climate information.¹ Decision makers seek accurate, reliable climate information that will help them evaluate options and make smart investment choices to respond to the impacts of climate variation and change. In addition, the local-to-global-scale impacts of climate variability and change have fueled a growing public demand for climate services—easily accessible and timely scientific data and information about climate and climate change that helps people make informed decisions in their lives, businesses, and communities. In much the same way as Americans rely upon authoritative and official forecasts from NOAA's National Weather Service, they want authoritative and official information about climate on many scales, from local to global, monthly to decadal.

For decades, NOAA and its partners have been providing climate information that is essential to many aspects of decision-making.² Climate observations, monitoring, modeling, and predictions—underpinned by the best available science—provide the foundation for today's climate services. However, society's need for climate information and services has grown greater than the climate services that NOAA and its partners can provide today.³ Thus, several scientific and policy organizations have called for the establishment of U.S. climate services to provide timely and authoritative information on climate and its

¹ Dutton, J.A., 2002: Opportunities and Priorities in a New Era for Weather and Climate Services. *Bulletin of the American Meteorological Society*, 83, 1303-1311.

² See <http://www.economics.noaa.gov/> for a thorough and up-to-date discussion of the economics and social benefits of NOAA Data and Services.

³ NRC (V. Ramanathan Chair), 2009: Restructuring Federal Climate Research to Meet the Challenges of Climate Change. The National Academies Press, Washington, DC, 13.

impacts, at multiple time scales and geographic areas, and tailored to the decision-making needs of information users.⁴

NOAA's Response

NOAA's existing framework for climate services crosses multiple line offices and is not optimal for climate service delivery in its current form. While NOAA built a suite of climate services within its existing framework, such as its leadership in the interagency approach to delivering drought information services, other services are currently fragmented and distributed across the agency, complicating internal management and confusing stakeholders.

NOAA therefore, must make adjustments today that will support our long-term commitment to serving the climate service needs of the Nation. In February 2010 the Department of Commerce and NOAA announced their intent to establish a Climate Service to help fulfill society's growing needs for climate information and services. In the interim, NOAA has spent many months carefully studying alternatives to determine how NOAA can best meet the Nation's growing demand for climate information and has benefited from substantial input from both our employees and advisory bodies, such as the National Academy of Public Administration (NAPA), NOAA Science Advisory Board and the National Academies (please visit www.noaa.gov/climate for more information on this process).

The resulting Climate Service proposal included in the FY 2012 budget will bring together NOAA's world-class climate monitoring and modeling capabilities with a scalable partnership for sharing knowledge, increasing public understanding, and building professional capacity at all levels of society. NOAA expects the Climate Service to participate vigorously in Federal interagency partnerships, which are vital to fulfilling the demand for climate services, as each agency has unique and complementary strengths. For example, NOAA co-chairs the National Science and Technology Council's Roundtable on Climate Information and Services, which is coordinating the development and provision of climate services across all relevant federal agencies.

Under this reorganization, certain programs and activities with the Office of Oceanic and Atmospheric Research (OAR), the National Environmental Satellite, Data, and Information Service (NESDIS), and the National Weather Service (NWS) are proposed to be consolidated into renamed program activities and managed collectively as a Climate Service on par with the other line offices in our organizational structure.

In addition, the Department of Commerce proposes to consolidate the management and administration components of certain NOAA headquarters offices, and consolidate management of the NOAA Central Library. While several offices and organizations will be renamed to better reflect the activities that will occur in the realigned organizations, none of these reorganizations and consolidations requires relocation of any FTEs, programs or labs.

Climate Service

NOAA used the input from the Congressionally-mandated NAPA study and other internal and external input to guide the development of the Climate Service and its structure, vision, mission, and strategic goals. Individuals, local and national governments, and the private sector are increasingly demanding this information to be able to better understand, adapt to, and plan for a changing climate. The Climate Service will be a comprehensive and integrated Line Office responsible for NOAA's climate science, data, information and services.

The Climate Service will encompass a core set of longstanding NOAA capabilities with proven success, including climate observations, research, modeling, predictions and projections, assessments, and service

⁴ Miles, E.L., A.K. Snover, L.C. Whitley Binder, E.S. Sarachik, P.W. Mote, and N. Mantua. 2006: An Approach to Designing a National Climate Service. *Proceedings of the National Academy of Sciences* 103(52), 19,617-19,623. National Academy of Public Administration, 2010: Building Strong for Tomorrow: Recommendations for the Organizational Design of the NOAA Climate Service.

delivery infrastructure. Operating as a single Line Office will: 1) promote integration of NOAA's climate science and service assets, 2) heighten the accessibility and visibility of NOAA's climate services for our partners and users, and, 3) allow NOAA to more efficiently address user and partner needs compared to our current distributed structure. Also, many of our programs across NOAA such as NWS forecast offices, Sea Grant, and the Coastal Services Center, among others, will continue to assist with user engagement and service delivery as NOAA works collectively to meet the climate challenge.

The Climate Service integrates longstanding NOAA capabilities -- world-class researchers, observations, monitoring, predictions, assessments, and training -- into a single organization and point of entry for stakeholders and partners, and will leverage the existing on-the-ground service delivery across the agency.

NOAA is developing a [Vision and Strategic Framework](#)⁵, which benefited from a recently-completed public comment period. This framework outlines how the Climate Service can achieve new strategic goals related to the delivery and development of reliable, timely, and authoritative climate science and services to enable a climate-resilient society to grow and prosper.

The Vision and Mission of the Climate Service will be:

- *Vision:* By providing science and services, the Climate Service envisions an informed society capable of anticipating and responding to climate and its impacts.
- *Mission:* Improve understanding and prediction of changes in climate and inform a climate-resilient society by:
 - Monitoring climate trends, conducting research, and developing models to strengthen our knowledge of the changing climate and its impacts on our physical, economic, and societal systems;
 - Providing authoritative and timely information products and services about climate change, climate variability, and impacts; and
 - Informing decision-making and management at the local, state, regional, national, and international levels.
- The Climate Service delivers products and services in collaboration with public, private, and academic partners to maximize social, economic, and environmental benefits.

Climate Service Components:

The NOAA components proposed for consolidation as the Climate Service are:

- Chemical Science Division of Earth System Research Laboratory (ESRL) (from OAR)
- Global Monitoring Division of ESRL (from OAR)
- Physical Science Division of ESRL (from OAR)
- Office of the Director of ESRL (from OAR)
- Geophysical Fluid Dynamics Laboratory (from OAR)
- Climate Program Office (from OAR)
- NOAA's Data Centers (including CLASS) (from NESDIS)
- Climate Observing Network – Regional U.S. Historical Climate Network and TAO array (from NWS)
- Climate Prediction Center (from NWS)

The proposed reorganization will:

- Reassign existing administrative and program leadership staff and functions and reorganize them into four Staff Offices, plus an Office of the Assistant Administrator, to form a Climate Service Headquarters. This includes the following positions: Assistant Administrator, Deputy Assistant Administrator, Chief Financial Officer/Chief Administrative Officer, Director of Policy and Planning as Senior Executive Service

⁵ http://www.noaa.gov/climate/resources/resources/CS_Draft_Vision_Strategic_Framework_v9.0%202010_12_20-1.pdf

(SES) positions, Climate Senior Scientist as a Senior Level (SL) employee, and an International Climate Services Director.

- Reorganize the consolidated programs and activities from OAR, NESDIS, and NWS into three principal components within the Climate Service including an Office of Climate Research, an Office of Observation, Monitoring, and Prediction, and an Office of Service Development and Delivery. Each of these offices would be led by a realigned or reassigned SES position.
 - Establish a Regional Climate Services Partnerships Division, Customer Engagement and Education Division, and a Grants Division within the Office of Service Development and Delivery.
 - Establish an Observation Systems Division in the Office of Observation, Monitoring, and Prediction.
- Transfer the Geophysical Fluid Dynamics Laboratory; the Earth System Research Laboratory (ESRL) and three divisions – Chemical Sciences, Physical Sciences, and Global Monitoring – from OAR into the Climate Service; and the Climate Program Office from OAR into the Climate Service.
 - Rename the ESRL divisions as follows: Chemical Sciences Laboratory, Physical Sciences Laboratory, and Global Monitoring Laboratory.
- Transfer the National Climatic Data Center, the National Oceanographic Data Center, and the National Geophysical Data Center from NESDIS to the Climate Service.
- Transfer the Climate Prediction Center, TAO Array, and the Regional U.S. Historical Climatology Network from the NWS to the Climate Service.
- Transfer the function of providing library and information services from the National Oceanographic Data Center, formerly under NESDIS, to the Office of the Chief Information Officer and High Performance Computing and Communications under Staff Offices Reporting to the Office of the Deputy Under Secretary for Operations.
- Modify the duties and responsibilities of NESDIS in conformance with the changes described above, and change the name from NESDIS to the National Environmental Satellite Service (NESS).
- Modify the duties and responsibilities of OAR in conformance with the changes described above.
- Merge the Office of Program Analysis and Evaluation (PA&E) and the Office of Program Planning and Integration (PPI) into a renamed Office of Strategic Planning and Evaluation (SPE) under the Deputy Under Secretary for Operations. This change will enhance leadership and improve management of all NOAA programs through policy development and planning, and provide efficiencies in staffing the planning activity.

This proposed reorganization will not increase the NOAA Full-Time Equivalent (FTE) or billet allocation, and existing facilities will accommodate this reorganization. Supervisory ratios and layers will be adjusted appropriately as a result of these actions. All realignments that occur will result in a zero sum realignment of funds within the base NOAA budget.

NOAA will continue to fulfill all labor obligations as they relate to bargaining units impacted by the reorganization of the climate programs in NOAA. This reorganization will have no adverse impact to the units or minority employees.

This reorganization will allow NOAA to provide a single, reliable, and authoritative source for climate data, information, and decision-support services and to more effectively coordinate with other agencies and partners. It is imperative that NOAA and DOC adapt and change to meet the current circumstances and future challenges in bringing together strong climate science and service delivery capabilities to the public.

Office of Oceanic and Atmospheric Research (OAR)

OAR will transfer to the Climate Service the Geophysical Fluid Dynamics Laboratory, the Climate Program Office, and components of the Earth Systems Research Laboratory (ESRL): including the Global Monitoring Division, the Physical Sciences Division, and the Chemical Sciences Division. The former divisions of ESRL will become independent laboratories under the reorganization proposal.

NOAA carefully considered how existing Line Offices will be affected by this reorganization. NOAA's centralized research Line Office, the Office of Oceanic and Atmospheric Research (OAR), will continue to serve all of NOAA by supporting and producing preeminent mission driven research. NOAA concurs with NAPA's assessment that, OAR, "provides particularly important institutional glue to support innovation across NOAA." In addition NAPA concluded that, "all parts of NOAA benefit from OAR's work to incubate fundamentally new approaches to mission-centered science, a capability best sustained by maintaining a nimble, freestanding OAR Line Office." OAR serves as the focus for long-term research in NOAA; an innovator and incubator of new science, technologies, and applications; an integrator of science and technology across all of NOAA to attain mission objectives; and a provider of science program analysis and policy support to the NOAA Chief Scientist. OAR, along with our partners, strengthens the science that underpins NOAA's products and services. In addition, OAR supports the Department of Commerce's and Administration's initiatives to generate new, cutting-edge scientific understanding of technical, economic, social, and environmental systems.

As part of an effort to strengthen science, NOAA will look to OAR to play an expanded role as the incubator and integrator of science and technology across NOAA. OAR will take a holistic look at NOAA's research portfolios and to identify NOAA's science challenges and gaps; suggest approaches to address challenges and gaps; and integrate research across NOAA's Line Offices to gain a comprehensive understanding of the earth system. In addition, OAR's Assistant Administrator will be designated as the Senior Advisor to the NOAA Chief Scientist and will be a provider of science program analysis and policy support to the NOAA Chief Scientist.

NOAA's atmospheric and ocean, coastal and Great Lakes research and applied science is at the forefront of discovery and is a critical component of advancing the goals of the America COMPETES Reauthorization Act of 2010. The agency will rely on OAR to coordinate and develop such emerging and integrative subjects as ocean acidification, improved meteorological, oceanic, and climatological observations, modeling, and forecasting to expand the use of renewable energy sources, "warn on forecast," unmanned aircraft systems and autonomous underwater vehicles, and emphasize areas that are important challenges for NOAA, such as ecosystem science beyond the scope of fisheries-related applications. Some climate research will continue to be done in OAR, particularly in those areas at the intersections between climate, weather, and ecosystems sciences. This will allow for continued excellence in interdisciplinary work, such as that which led to the cutting-edge ocean acidification work that will continue in OAR. OAR will also serve as a programmatic lead for environmental modeling as we move to truly integrated modeling that spans the full domain of physical, chemical, and biological. When mature, the products or activities of these subjects will transition to other Line Offices for operation or application.

National Weather Service

The National Weather Service (NWS) will transfer two climate-focused observing systems (the TAO array, and the Regional US Historical Climatology Network) and the Climate Prediction Center (CPC) to the Climate Service. The transfer of the observing systems will allow consolidation of NOAA's climate observing assets under the same management. NOAA is committed to ensuring cross-line integration to

support both the NWS and Climate Service missions. The NWS will work with the Climate Service and other NOAA line offices to ensure a seamless suite of weather and climate services – from minutes to decades – that are easily accessed and understood by our users.

For example, the data collected by NWS each day feeds into the long-standing climate record currently maintained by the National Climatic Data Center (NCDC), now proposed to be part of the Climate Service. NWS will continue to work with the Climate Service (through NCDC) on data standards, continuity of data and our relationship with the Regional Climate Centers. The Climate Service will also house the six new Regional Climate Service Directors in the established NWS Regional Headquarters to ensure coordination between NWS and the Climate Service and leverage the existing relationships in the regions.

The transfer of CPC will provide enhanced continuity between NOAA's short and long-term climate prediction capabilities. Although the CPC will be moved into the Climate Service it will continue to provide operational seasonal outlooks and predictions, hazard assessments, and inform both NWS and the Climate Service about phenomena that link climate to weather events (e.g., El Nino/La Nina, Madden/Julian Oscillation, teleconnections, etc.). The transfer of the observing systems will allow consolidation of NOAA's climate observing assets under the same management.

National Environmental Satellite Service

The National Environmental Satellite Service (NESS), formerly the National Environmental Satellite, Data, and Information Service (NESDIS), will transfer all three of its Data Centers to the Climate Service. The National Climatic Data Center, the National Oceanographic Data Center and the National Geophysical Data Center will continue to serve their current functions, supporting not only the Climate Service, but all of NOAA. The Climate Service will build on the long tradition of data stewardship that the data centers have established, and provide an opportunity for expanded responsibility with regard to integration with observing systems and related science. NESS will work closely with the Data Centers in the Climate Service to ensure that data and information produced by the satellites are archived and accessible for use by NOAA's internal and external stakeholders.

NOAA Headquarters

NOAA Central Library

The NOAA Central Library will move from the National Oceanographic Data Center to the NOAA Office of the Chief Information Officer. This change will enhance leadership and improve management of all NOAA programs through policy development and planning, and provide efficiencies in staffing the planning activity.

Office of Strategic Planning and Evaluation

The Office of Strategic Planning and Evaluation is the combination of the Office of Program Planning and Integration and the Office of Program Evaluation and Analysis. The merger is required to effectively execute NOAA's transition from Planning, Programming, Budgeting, and Execution System (PPBES) to the Strategy, Execution, and Evaluation system (SEE). The SEE process is a continuing effort by NOAA to align the strategic priorities to the budget and to provide meaningful evaluation of the budget execution. With the implementation of NOAA's Next Generation Strategic Plan in FY 2011, NOAA is presented with a unique opportunity to reassess the budget formulation process and take steps to implement processes that provide organizational efficiencies. The Office will also be responsible for coordinating activities implementing the National Environmental Policy Act, oversight and management of NOAA's Regional Collaboration network, and for spearheading NOAA's economic and social science efforts. By consolidating offices and moving the employees of PA&E into PPI, the strategic analysis and the execution evaluation functions of the two offices may be dealt with more efficiently, consistently and promptly under one supervisor.

Conclusion

NOAA believes that this proposed reorganization and consolidation of our considerable, but disparate climate science assets will better meet the growing demands of the public and private sectors for climate services by enhancing NOAA's ability to:

- Connect users to existing climate products and services, while continuing to develop new authoritative, reliable services.
- Transform current science and data into understandable, usable and accessible information, while continuing to strengthen and expand climate science.
- Engage users and partners in service development and dissemination.

The Climate Service can also create new opportunities for business development. Weather and climate sensitive industries, both directly and indirectly, account for about one-third of the Nation's GDP ranging from finance, insurance, and real estate to services, retail and wholesale trade and manufacturing. NOAA's National Weather Service has fostered the development of a private sector focused on supporting this segment of the economy. Similarly, NOAA sees possibilities for a new private sector industry, one spawning new jobs and supporting a green economy, that could emerge around the products and information generated by the new office.

Authoritative, timely and reliable information about climate variability and change opens a world of possibilities to build resilient communities, infrastructure, and economies. The Climate Service will transform science into useable climate services for the nation.

**NOAA's Proposed Reorganization for a Climate Service Crosswalk Table
(Dollars in Thousands and based on the FY 2011 Continuing Resolution)**

Transfer Office	Line	Recipient Office	Line	Amount (\$K)/FTE
OAR	Climate Labs & Coop. Institutes	Climate Service	Climate Research – Modeling	\$14,877/ 53 FTE
OAR	Climate Labs & Coop. Institutes	Climate Service	Climate Research - Physical Sciences	\$2,993/ 25 FTE
OAR	Climate Labs & Coop. Institutes	Climate Service	Climate Research - Chemical Sciences	\$9,203/ 36 FTE
OAR	Climate Labs & Coop. Institutes	Climate Service	Climate Research - Global Monitoring & Research	\$6,240/ 25 FTE
OAR	Competitive Research Program	Climate Service	Climate Research – Modeling	\$4,832/ 15 FTE
OAR	Competitive Research Program	Climate Service	Climate Research - Physical Sciences	\$301/ 5 FTE
OAR	Competitive Research Program	Climate Service	Climate Research - Chemical Sciences	\$4,828/ 4 FTE
OAR	Competitive Research Program	Climate Service	Climate Research - Global Monitoring & Research	\$7,365/ 15 FTE
OAR	Competitive Research Program	Climate Service	Climate Research - Competitive Research Program	\$68,595/ 44 FTE
OAR	Competitive Research Program	Climate Service	Integrated Climate Service - NIDIS	\$9,762/ 1 FTE
OAR	Competitive Research	Climate	Integrated Climate	\$788/

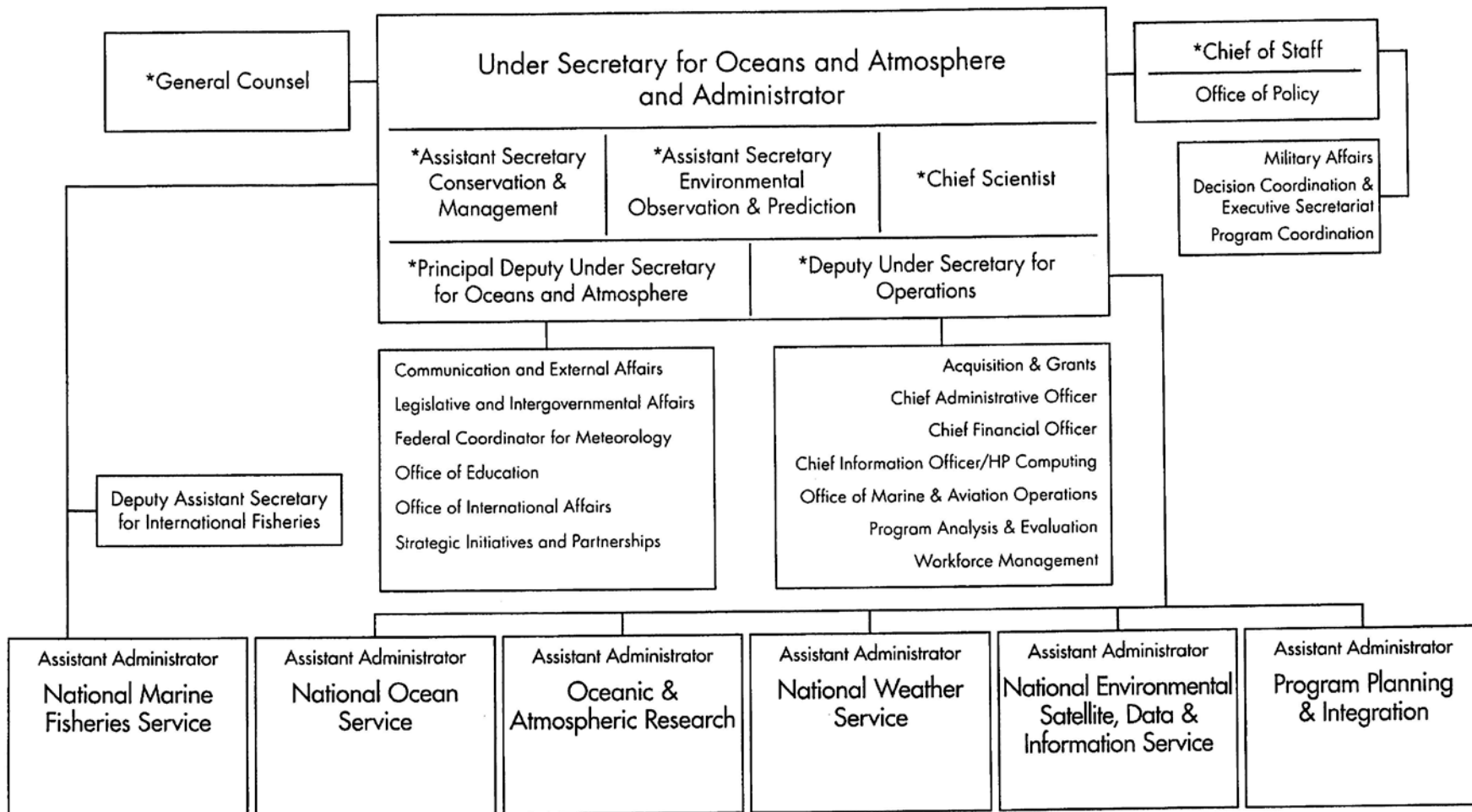
	Program	Service	Service - Regional Services	3 FTE
OAR	Competitive Research Program	Climate Service	Integrated Climate Service - Communication & Education	\$1,400/ 0 FTE
OAR	Competitive Research Program	Climate Service	Observations & Monitoring - Ocean Observations	\$40,378/ 19 FTE
OAR	Competitive Research Program	Climate Service	Observations & Monitoring - Climate Data & Information Services	\$1,014/ 0 FTE
OAR	Competitive Research Program	Climate Service	Observations & Monitoring - Environmental Sciences	\$483/ 0 FTE
OAR	Competitive Research Program	Climate Service	Observations & Monitoring - Atmospheric Observations	\$453/ 1 FTE
OAR	Regional Climate Assessment	Climate Service	Integrated Climate Service - Assessment Services	\$9,000/ 0 FTE
OAR	Climate Data & Information	Climate Service	Climate Research - Competitive Research Program	\$1,133/ 1 FTE
OAR	Climate Data & Information	Climate Service	Integrated Climate Service - NIDIS	\$3,753/ 0 FTE
OAR	Climate Data & Information	Climate Service	Observations & Monitoring - Climate Data & Information Services	\$2,395/ 0 FTE
OAR	Climate Data & Information	Climate Service	Observations & Monitoring - Ocean Data & Information Services	\$12/ 0 FTE
OAR	Climate Data & Information	Climate Service	Observations & Monitoring - Atmospheric Observations	\$4,787/ 2 FTE
OAR	Climate Operations	Climate Service	Climate Research - Modeling	\$320/ 0 FTE
OAR	Climate Operations	Climate Service	Integrated Climate Service - Regional Services	\$593/ 0 FTE
OAR	Climate Other Partnership Programs	Climate Service	Climate Research - Chemical Sciences	\$350/ 0 FTE
OAR	Climate Other Partnership Programs	Climate Service	Climate Research - Global Monitoring & Research	\$100/ 0 FTE
OAR	Climate Other	Climate	Climate Research -	\$645/ 0 FTE

	Partnership Programs	Service	Competitive Research Program	0 FTE
OAR	Climate Other Partnership Programs	Climate Service	Integrated Climate Service - Regional Services	\$3,000/ 0 FTE
OAR	W&AQ Labs & Coop. Institutes	Climate Service	Climate Research - Modeling	\$3,456/ 4 FTE
OAR	W&AQ Labs & Coop. Institutes	Climate Service	Climate Research - Physical Sciences	\$7,472/ 22 FTE
OAR	W&AQ Labs & Coop. Institutes	Climate Service	Climate Research - Chemical Sciences	\$3,800/ 0 FTE
OAR	W&AQ Labs & Coop. Institutes	Climate Service	Climate Research - Global Monitoring & Research	\$192/ 1 FTE
OAR	W&AQ Other Partnership Programs	Climate Service	Climate Research - Physical Sciences	\$500/ 0 FTE
OAR	W&AQ Other Partnership Programs	Climate Service	Climate Research - Chemical Sciences	\$500/ 0 FTE
OAR	Research Super-computing	Climate Service	Climate Research - Research Super-computing (PAC)	\$10,379/ 0 FTE
NWS	Local Warnings & Forecasts	Climate Service	Observations & Monitoring - Ocean Observations	\$4,300/ 0 FTE
NWS	Central Forecast Guidance	Climate Service	Observations & Monitoring - Observations, Monitoring & Prediction	\$6,930/ 47 FTE
NWS	Cooperative Observer Network Mod. (NERON)	Climate Service	Observations & Monitoring - Historical Climatology Network Modernization (PAC)	\$3,734/ 0 FTE
NESS	Archive, Access, & Assessment	Climate Service	Observations & Monitoring - Climate Data & Information Services	\$28,189/ 119 FTE
NESS	Archive, Access, & Assessment	Climate Service	Observations & Monitoring - Ocean Data & Information Services	\$9,319/ 39 FTE
NESS	Archive, Access, & Assessment	Climate Service	Observations & Monitoring - Geophysical Data & Information Services	\$5,946/ 48 FTE
NESS	Archive, Access, & Assessment	Climate Service	Integrated Climate Service - Regional Services	\$0/ 3 FTE
NESS	Climate Data Base Modernization	Climate Service	Observations & Monitoring - Climate Data & Information Services	\$21,179/ 10 FTE

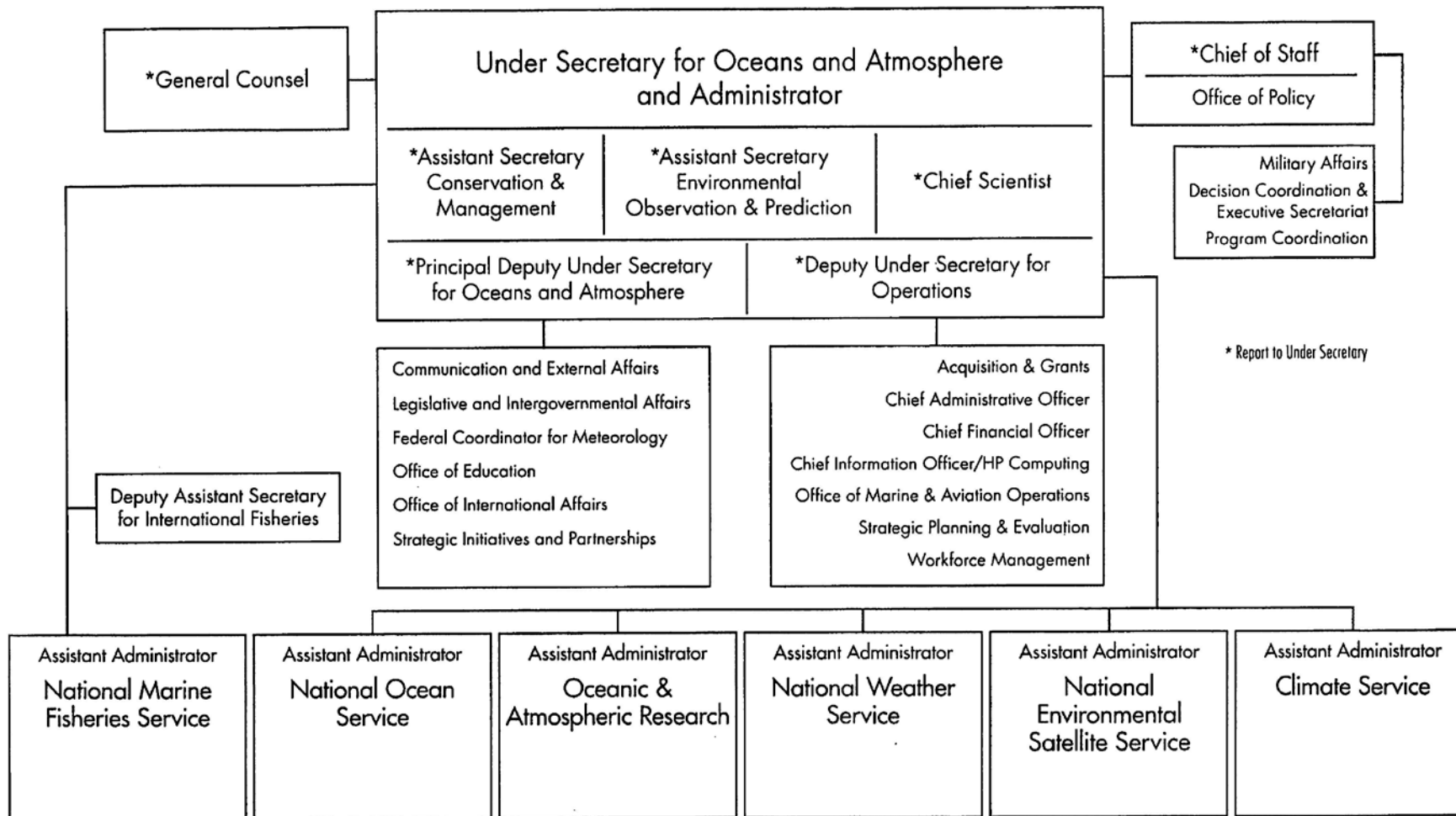
NESS	Coastal Data Development	Climate Service	Observations & Monitoring - Ocean Data & Information Services	\$4,559/ 16 FTE
NESS	Regional Climate Centers	Climate Service	Integrated Climate Service - Regional Services	\$3,500/ 0 FTE
NESS	Environmental Data Systems Modernization	Climate Service	Observations & Monitoring - Environmental Sciences	\$9,511/ 0 FTE
NESS	Environmental Data Systems Modernization	Climate Service	Observations & Monitoring - Climate Data & Information Services	\$0/ 23 FTE
NESS	Integrated Environ Applications & Info Ctr	Climate Service	Observations & Monitoring - Environmental Sciences	\$3,000/ 0 FTE
NESS	NOAA Regional Climate Center program	Climate Service	Observations & Monitoring - Environmental Sciences	\$850/ 0 FTE
NESS	GOES- N (PAC)	Climate Service	Observations & Monitoring – Data Center Modernization (PAC)	\$2,846/ 0 FTE
NESS	CLASS (PAC)	Climate Service	Observations & Monitoring - CLASS (PAC)	\$18,476/ 0 FTE
NESS	EOS & Advanced Polar Data Processing, Distribution, & Archiving Systems (PAC)	Climate Service	Observations & Monitoring – EOS & Advanced Polar Data Processing, Distribution, & Archiving Systems (PAC)	\$990/ 0 FTE
Total Climate Service				\$349,228/ 581 FTE

Transfer Office	Line	Recipient Office	Line	Amount (\$K)/FTE
NESS	Archive, Access, & Assessment	PS	NOAA Wide Corporate Services & Agency Management Base	\$2,622/ 11 FTE
Total PS				\$2,622/ 11 FTE

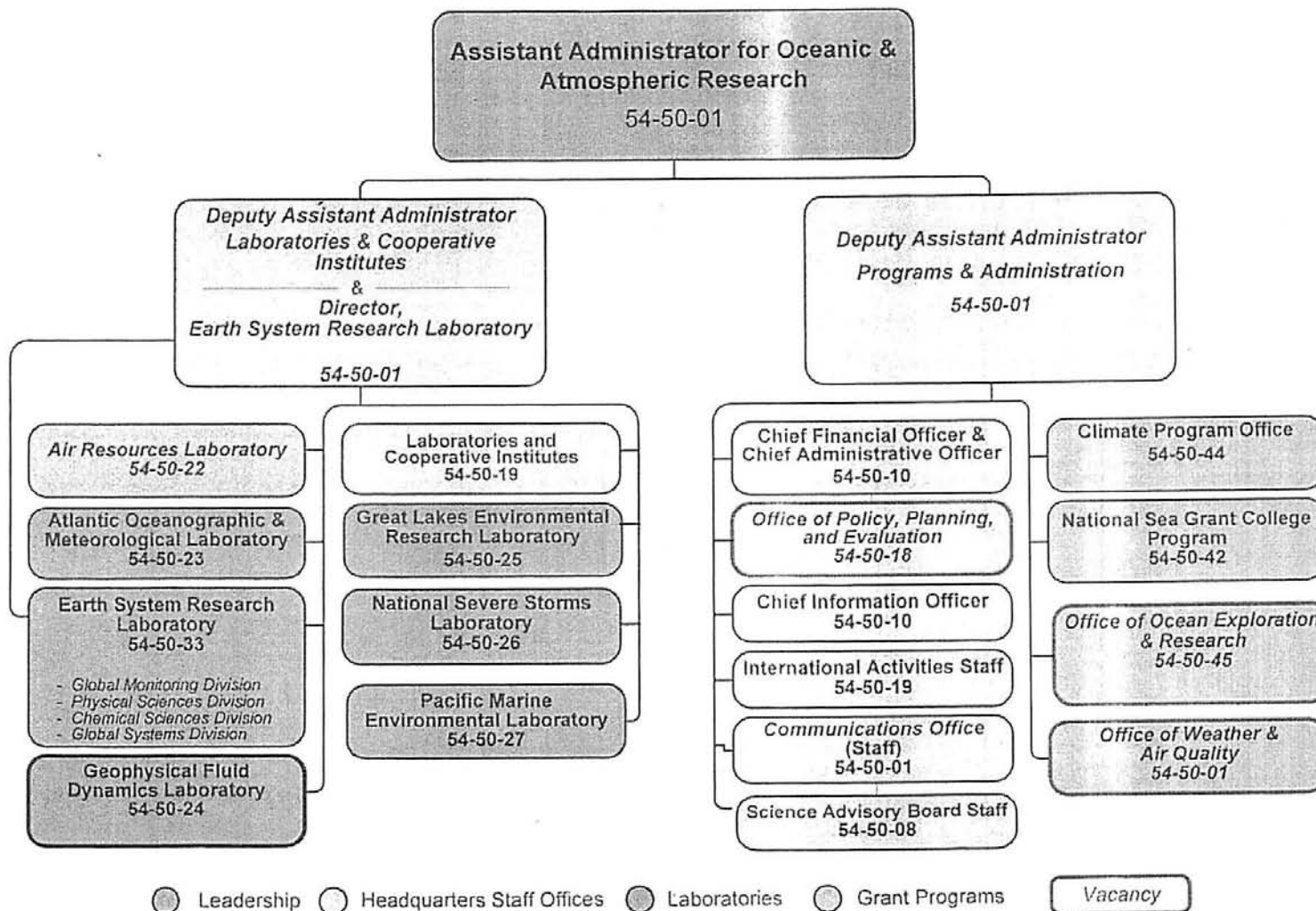
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



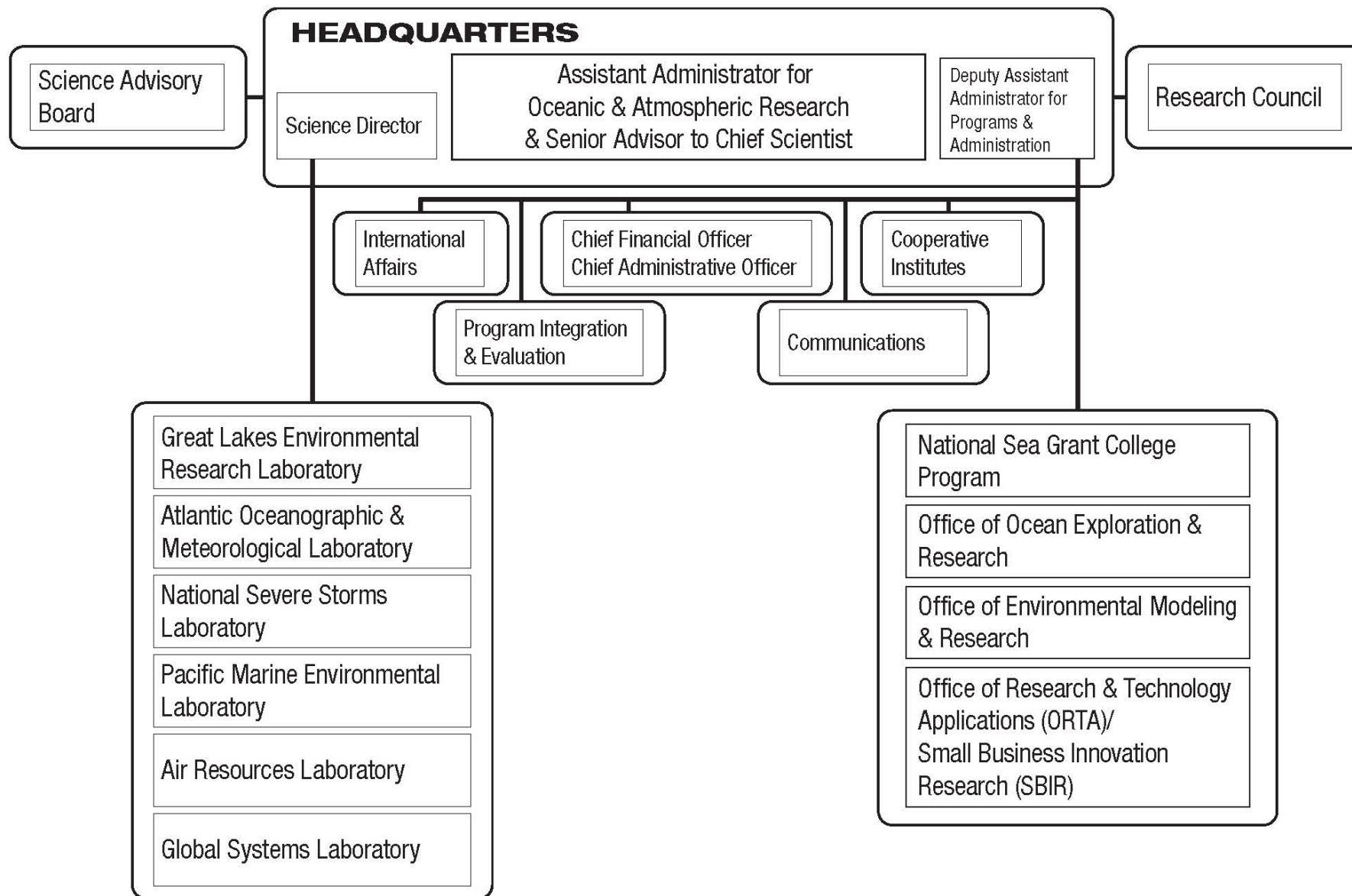
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



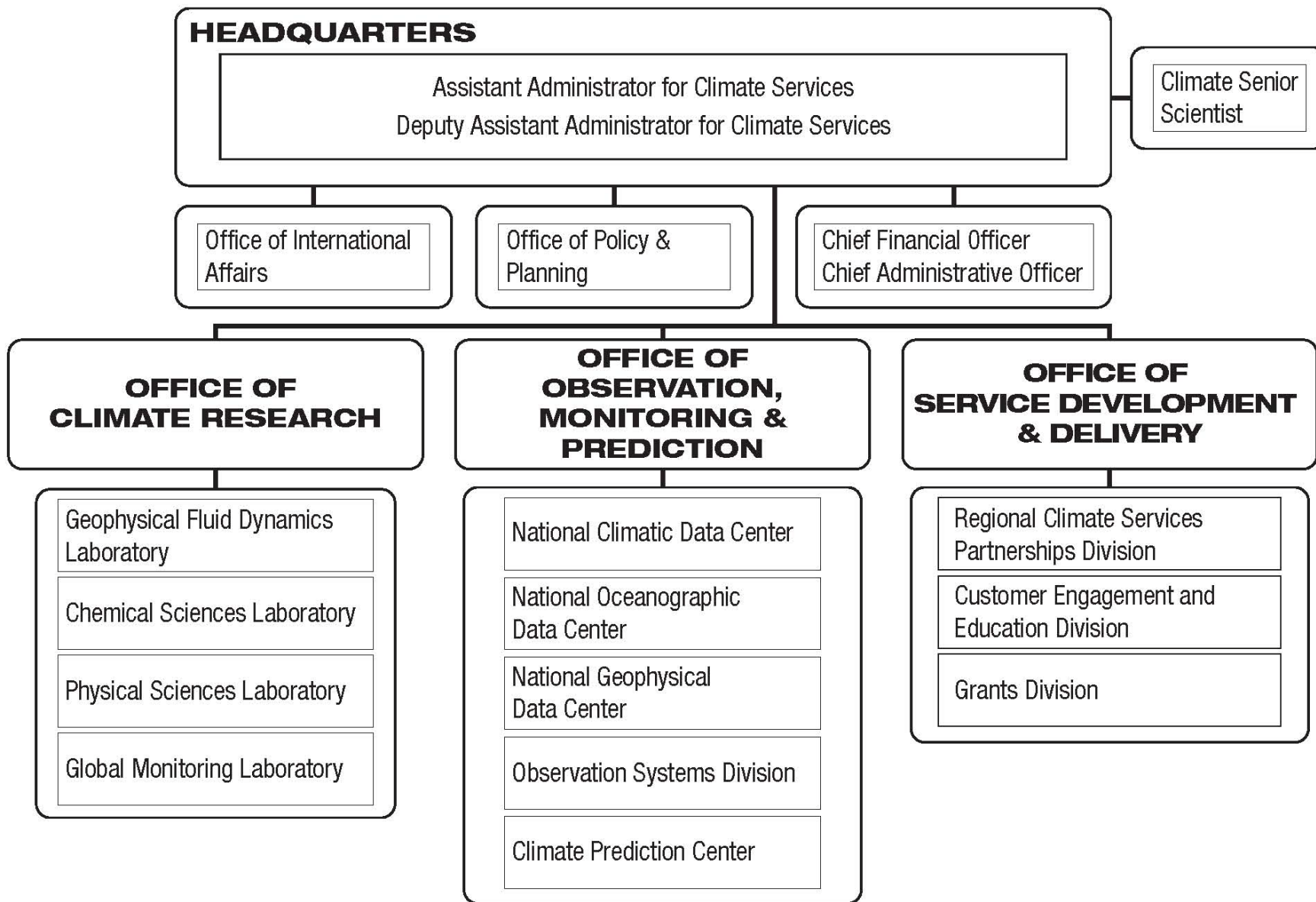
Office of Oceanic and Atmospheric Research Organization Chart



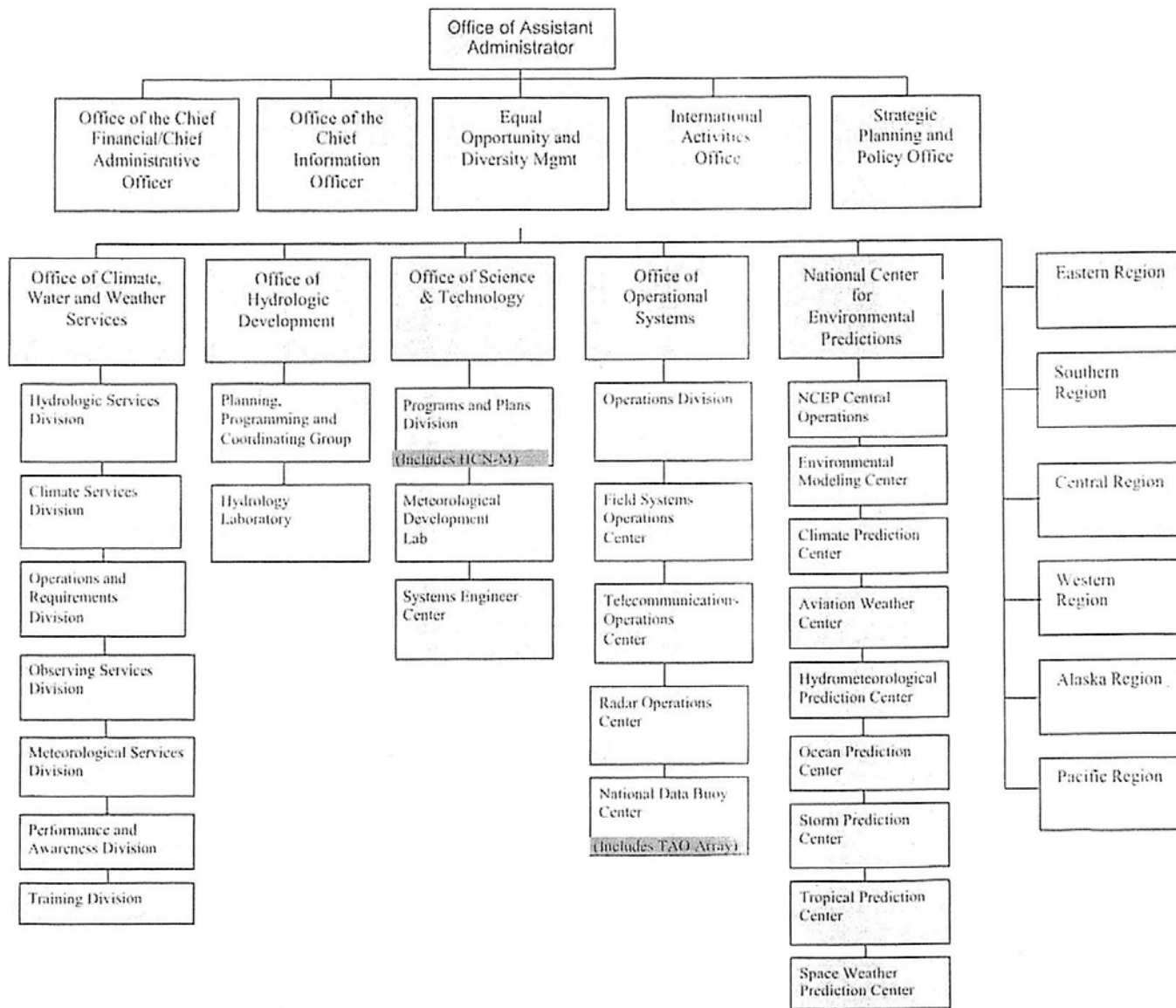
OFFICE OF OCEANIC & ATMOSPHERIC RESEARCH (OAR)



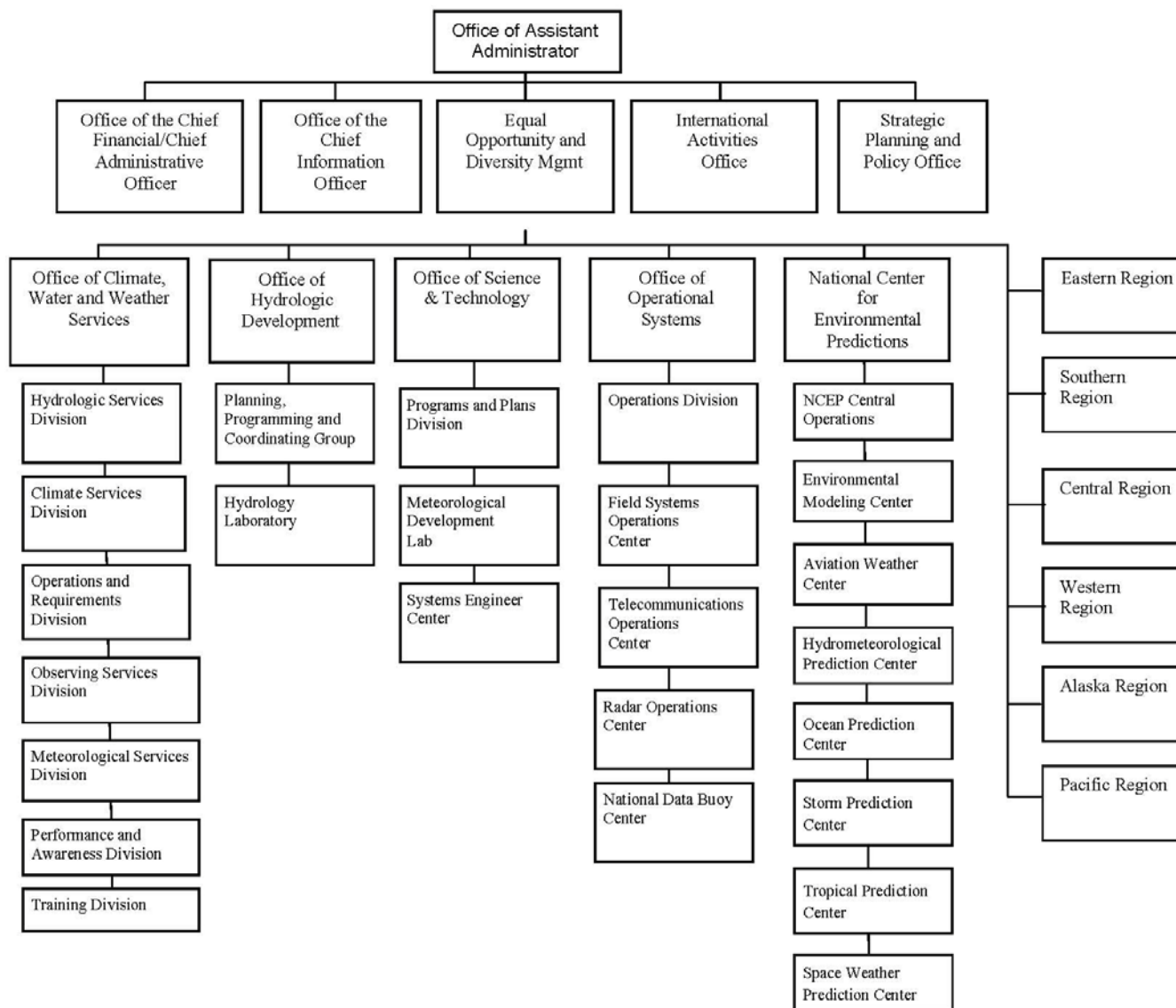
CLIMATE SERVICE

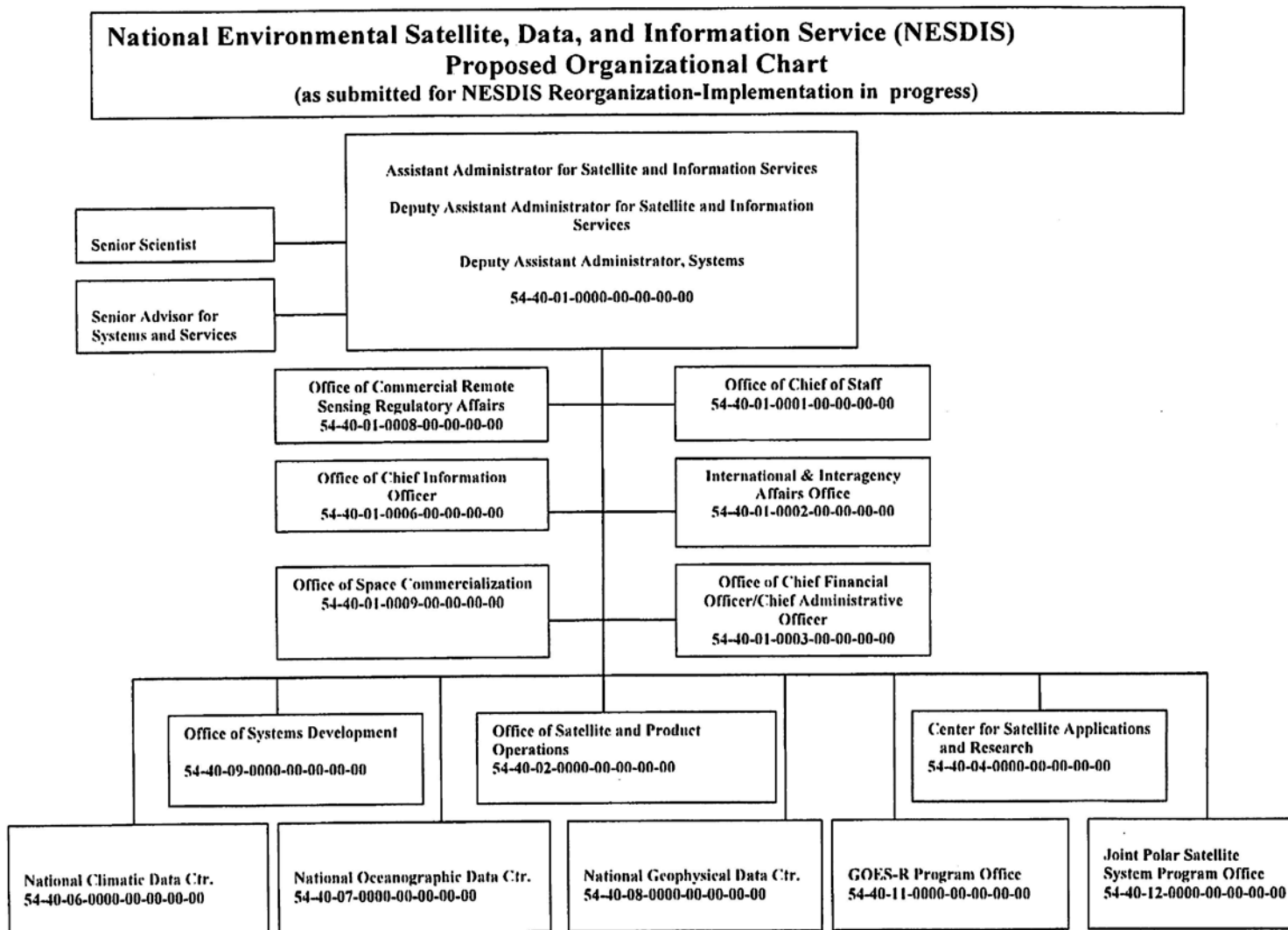


Current (FY 10) National Weather Service Organization

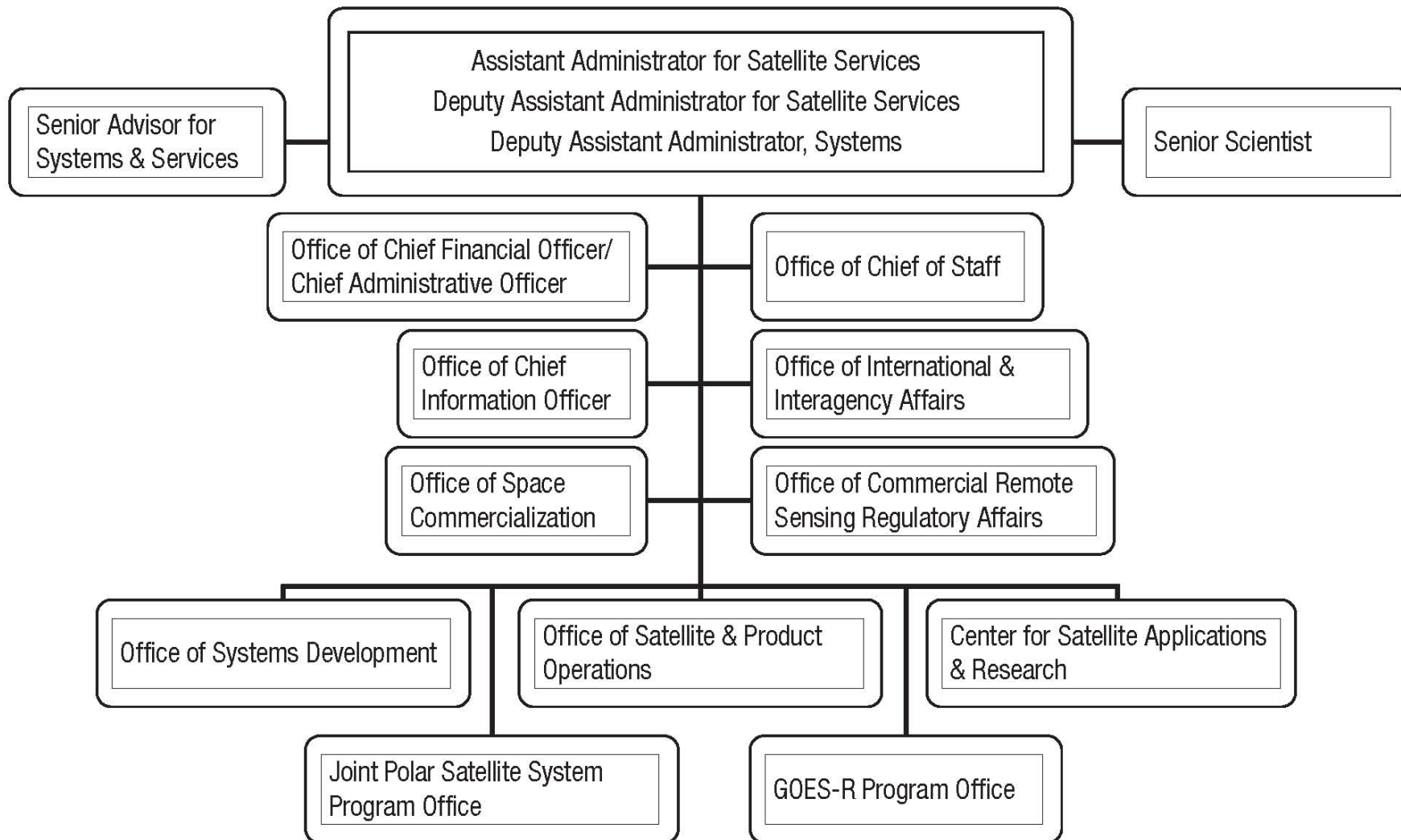


Future (Post Climate Service Formation) National Weather Service Organization



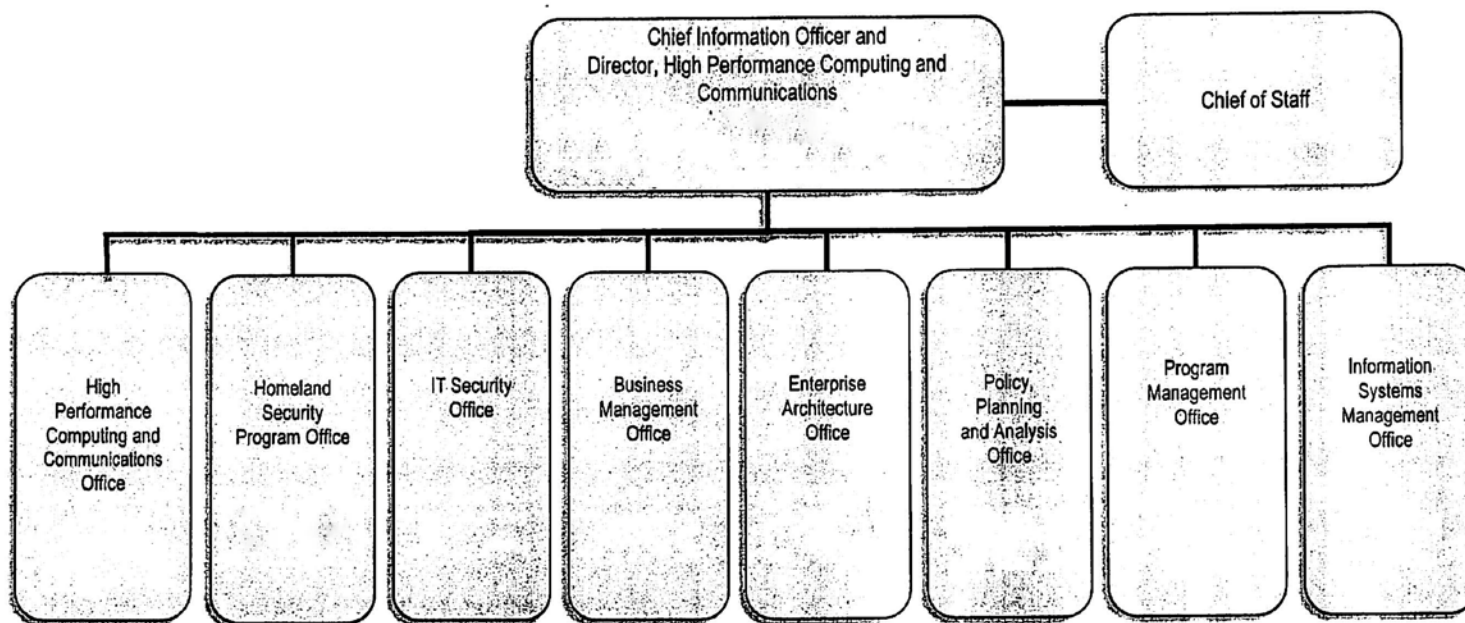


NATIONAL ENVIRONMENTAL SATELLITE SERVICE (NESS)



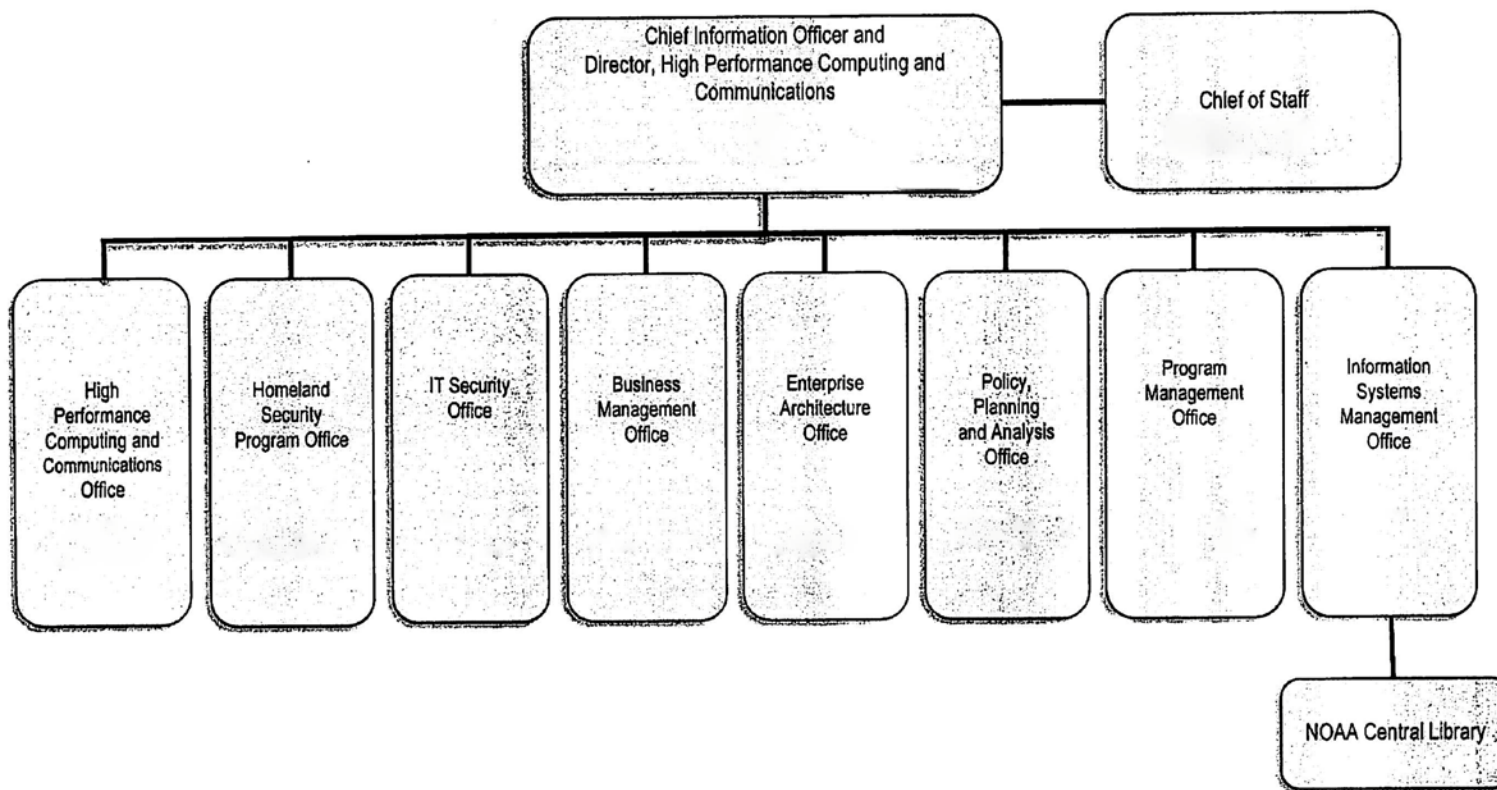


Office of the Chief Information Officer (OCIO) Current Organization Chart





Office of the Chief Information Officer (OCIO) Proposed Organization Chart



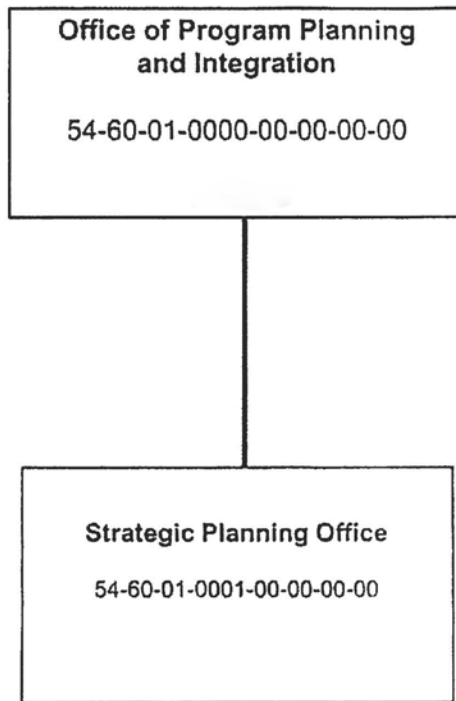
Program Analysis and Evaluation (Current)

**Office of Program Analysis
and Evaluation**

54-06-00-0000-00-00-00-00

Program Planning and Integration

Current



PROPOSED SPE ORGANIZATION

**Office of Strategic Planning
and Evaluation**
54-06-58-0000-00-00-00-00

Section 4: Targets and Performance Summary

DOC Objective 13: Enhance scientific knowledge and provide information to stakeholders to improve innovation, support economic growth and improve public safety

Measure 13a: Percentage of weather-related research projects transitioned to NWS operations during each two-year period (i.e., for each year and the immediately prior year).

<p>Measure Description</p>	<p>This pilot measure addresses NOAA’s level of success in transitioning research produced by the Office of Oceanic and Atmospheric Research (OAR) into use in National Weather Service (NWS) operations. Each transition project identified for this measure represents significant new, expanded, or enhanced techniques, models, observation systems, or decision aids. The measure does not include routine minor enhancements. To ensure the best available science and technology continue to be applied in the effort to meet NOAA’s mission, effective transitions from research to operations are essential. The percentages are calculated by dividing the number of transitioned projects (for each year and the immediately preceding year) by the total number of weather-related research projects conducted during that two-year period in order to capture projects that are entering into near-term (0-2years) and are expected to reach maturity. For example, the numerator for FY 2009 is the total number of successful transitions from OAR weather research to NWS operations during the current and preceding fiscal years (FY09 and FY08), and the denominator is OAR’s total number of weather-related research projects that are ultimately intended for transition to NWS (short-term, near-term, and mature projects).</p> <p>Note*:</p> <ul style="list-style-type: none"> • This measure is based on execution-year information. The tracking system for this information was initiated for FY 2008 and is currently under development. As we gain experience in tracking such transitions, we expect to gain the ability to set future targets. • This measure is never expected to approach 100%. Research projects generally require years to develop the robust science needed for transition to operations. Consequently, a well-balanced portfolio is not expected to result in the transfer of all research projects to operations in any given two-year period. It is critical for NOAA to maintain a research portfolio that includes a mix of relatively mature projects and projects that are laying the groundwork for future advances. Because of critical variations, comparison of a two-year period is expected to generate more meaningful trends. 					
<p>Target and Performance Table</p>						
	<p>FY2007 Actual</p>	<p>FY2008 Actual</p>	<p>FY2009 Actual</p>	<p>FY2010 Actual</p>	<p>FY2011 Target</p>	<p>FY2012 Target</p>
		<p>14%</p>	<p>19%</p>	<p>17%</p>	<p>16%</p>	<p>16%</p>
<p>Comments on Changes to Targets</p>	<p>NOAA has a record of successfully transitioning the results of its research to operational use by the NWS. For example, NOAA has transitioned such programs as NEXRAD and AWIPS, which revolutionized weather operations. NOAA continues to transition important projects. As one example in FY 2009, NWS declared operational acceptance of OAR’s first generation tsunami forecast system. This version was successfully used by warning centers during the February 27, 2010 Chilean tsunami.</p>					

Relevant Program Changes	Program Changes	Title of Program Change				Exhibit 13 Page Number
	NO	Because this is a pilot measure, it is not included in any of the budget increase narratives.				N/A
Validation & Verification Information	Data Source	Reporting Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
	NOAA's Office of Oceanic and Atmospheric Research (OAR) and National Weather Service (NWS)	Annual	OAR Project Database (in development and evolving) and the NWS project database	Results will be reported quarterly by OAR to NOAA's Line Office Transition Managers.	This measure is currently limited to transitions only from OAR to NWS. Also, the size and complexity of each tracked transition is not equal. Defining project boundaries is challenging, and the scope of research-to-operation transitions is a continuum, ranging from modest model modifications to major system changes.	NOAA plans to eventually expand the measure to include not only research projects transitioned to NWS, but also those transitioned to applications in other NOAA line offices as well as agencies.

Section 4 Targets and Performance Summary

DOC Objective 15: Enhance weather, water, and climate reporting and forecasting

Measure 15a - Severe Weather Warnings Tornadoes - Storm Based Lead Time (Minutes), Accuracy (%), and False Alarm Rate (%)

Measure Description	<p>The lead time for a tornado warning is the difference between the time the warning was issued and the time the tornado affected the area for which the warning was issued. The lead times for all tornado occurrences within the continental U.S. are averaged to get this statistic for a given fiscal year. This average includes all warned events with zero lead times and all unwarned events. Accuracy is the percentage of time a tornado actually occurred in an area that was covered by a warning. The difference between the accuracy percentage figure and 100 percent represents the percentage of events without a warning. The false alarm rate is the percentage of times a tornado warning was issued but no tornado occurrence was verified.</p>					
Target and Performance Table						
	FY2007 Actual	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Target	FY 2012 Target
Lead Time (minutes)	13	14	12	12	12	13
Accuracy (%)	78	72	66	74	70	72
False Alarm Rate (%)	76	75	77	74	72	71
Comments on Changes to Targets	<p>Tornado Warning Lead Time for an individual event is not available to an accuracy of half a minute. Although we have the time of the transmission of the warning to the nearest second, we rarely have more than an estimate to the nearest minute of the time a tornado touches down. While we can compute the average tornado warning lead time to a precision of 30 second increments or less, but the reporting of this value implies greater accuracy in the data than currently exists.</p> <p>The annual variation of tornado warning lead time (even as currently reported in minutes) is more closely tied to the variation in storm type than in performance. Long track tornadic supercell storms are easier to detect and track than tornadoes that develop in squall lines or tropical storms. Therefore, a year that has a number of long track supercells (FY08) will have a longer annual average lead time than a year where many of the tornadoes develop in squall lines (FY09) or tropical storms (FY05). Changes in performance can be detected over a period of several years, and are better measured to an accuracy of minutes. In conclusion, the natural variability that is associated with Tornado activity will not let us incorporate incremental improvements into this performance measure.</p> <p>Evacuation-based metrics for tornado warnings are not possible because individual responses to tornado warnings are not routinely reported to the NWS. Research meteorologists and social scientists have not yet identified and tested a satisfactory outcome-based metric for tornado warnings, though such research is ongoing.</p>					

	<p>Additional training courses on storm-based warnings are being developed and delivered to forecasters by the Warning Decision Training Branch in FY10 to facilitate improvements in Tornado Warning lead time. The field deployment of the dual-polarization upgrade to the WSR-88D will allow forecasters to better diagnose severe storm structure. Science results from the VORTEX-2 field project may also facilitate improvements.</p>					
<p>Impact of Recovery Act Funds</p>	<p>These funds will accelerate the Dual Polarization effort of the next generation (NEXRAD) Doppler weather radar system that will allow signals to be transmitted and received in two dimensions, resulting in a significant improvement in precipitation estimation; improved ability to discriminate rain, snow, and hail; and a general improvement in data quality. The new system will improve flash flood warnings, improve precipitation estimates and severe weather detection, including snow storms and icing conditions for air and ground transportation.</p>					
<p>Relevant Program Changes</p>	<p>Program Changes?</p>	<p>Title of Program Change</p>				<p>Exhibit 13 Page Number</p>
	<p>No</p>					<p>688, 740</p>
<p>Validation & Verification Information</p>	<p>Data Source</p>	<p>Reporting Frequency</p>	<p>Data Storage</p>	<p>Internal Control Procedures</p>	<p>Data Limitations</p>	<p>Actions to be Taken</p>
	<p>National Weather Service (NWS) Field Offices</p>	<p>Monthly</p>	<p>NWS Headquarters and the Office of Climate, Water, and Weather Services (OCWWS)</p>	<p>Verification is the process of comparing the predicted weather to reported event. Warnings are collected from each NWS office, quality controlled, and matched to confirmed tornado reports. Reports are validated by WFOs using concise and stringent guidelines outlined in NWS Instruction 10-1605. OCWWS monitors monthly</p>	<p>The number of tornado events each fiscal year generally varies from 1,000 to 1,800. A higher number of events in a fiscal year indicate that one or more large tornadic outbreaks have occurred. Forecasters perform better during large outbreaks due a high level of situational awareness, well defined tornadic radar images, and increased</p>	<p>Review all warnings and storm data after each event to learn from past experiences. Use the information learned to improve forecast skill and product quality in the future.</p>

				<p>performance throughout the NWS, and the regional headquarters monitor performance within their respective regions.</p>	<p>confidence based on tornado reports which verify warnings during these large scale events. These three factors lead to longer lead times and higher accuracy. The peak level of tornadic activity occurs April through June each year. A secondary peak activity time period is October and November in the southeastern United States.</p>	
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Section 4 Targets and Performance Summary

DOC Objective 15: Enhance weather, water, and climate reporting and forecasting

Measure 15b - Severe Weather Warnings for Flash Floods - Lead Time (minutes) and Accuracy (%)

Measure Description	<p>The lead time for a flash flood warning is the difference between the time the warning was issued and the time the flash flood affected the area for which the warning was issued. The lead times for all flash flood occurrences within the continental United States are averaged to get this statistic for a given fiscal year. This average includes all warned events with zero lead times and all unwarned events. Accuracy is measured by the percentage of times a flash flood actually occurred in an area that was covered by a warning. The difference between the accuracy percentage figure and 100 percent represents the percentage of events without a warning.</p>					
Target and Performance Table						
	FY2007 Actual	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Target	FY2012 Target
Lead Time (minutes)	60	77	73	76	38	40
Accuracy (%)	92	91	91	82	72	74
Comments on Changes to Targets	<p>After reviewing GRPA goals for the FY12 submission, OCWWS/HSD updated their analysis (utilizing performance data through 2/28/10) comparing lead time and accuracy scores using the existing county-based verification with scores computed using the new storm-based methods. The differences in the two verification methods over that 2+ year time period were applied to the existing GPRa accuracy and lead time goals (90% and 49 minutes) resulting in the new GPRa goals for FY12 (74% and 40 minutes). As more data become available, we will continue to analyze flash flood performance and relevant trends to reassess and update our GPRa goals.</p> <p>Background: NOAA National Weather Service transitioned from County-Based Flood Warnings to Storm-Based Flood Warnings. As with the transition from County-Based to Storm Based-Tornado Warnings, Storm-Based provide more precise warning capabilities compared to the County-Based methodology and increase forecaster difficulty. NOAA National Weather Service will monitor performance of the new Storm-Based Flood measures and will adjust targets accordingly. A primary impetus of this service enhancement was to reduce the area warned to provide more specific information to emergency responders and the public. By reducing the areal coverage of our flash flood warnings, the emergency management community can more effectively target mitigation and response efforts.</p> <p>A new verification methodology was developed to better utilize the more specific information in these new warning products. This new storm-based verification methodology is more stringent and results in lower metric scores for lead time and accuracy for flash floods. Flash flood performance data using this new verification methodology was computed beginning in FY08. Based on the single year of FY08 performance data,</p>					

	<p>OCWWS/HSD completed an analysis comparing lead time and accuracy scores using the existing county-based verification with scores computed using the new storm-based methods. The differences in the two verification methods over that one year time period were applied to the existing GPRA accuracy and lead time goals (90% and 49 minutes) resulting in the new GPRA goals for FY10 (72% and 38 minutes). Recognizing the limited amount of comparable performance data, it may be necessary to adjust the flash flood GPRA goals as we analyze flash flood performance and relevant trends using the new storm-based verification methods.</p>					
<p>Impact of Recovery Act Funds</p>	<p>These funds will accelerate the Dual Polarization effort of the next generation (NEXRAD) Doppler weather radar system that will allow signals to be transmitted and received in two dimensions, resulting in a significant improvement in precipitation estimation; improved ability to discriminate rain, snow, and hail; and a general improvement in data quality. The new system will improve flash flood warnings, improve precipitation estimate sand severe weather detection, including snow storms and icing conditions for air and ground transportation.</p>					
<p>Relevant Program Changes</p>	<p>Program Changes</p>	<p>Title of Program Change</p>				<p>Exhibit 13 Page Number</p>
<p>-</p>	<p>NO</p>				<p>688</p>	
<p>Validation & Verification Information</p>	<p>Data Source</p>	<p>Reporting Frequency</p>	<p>Data Storage</p>	<p>Internal Control Procedures</p>	<p>Data Limitations</p>	<p>Actions to be Taken</p>
	<p>National Weather Service (NWS) Field Offices</p>	<p>Monthly</p>	<p>NWS Headquarters and the Office of Climate, Water, and Weather Services (OCWWS)</p>	<p>While long-term performance has shown a steady increase in forecast accuracy, inter-annual scores tend to fluctuate due to varying weather patterns from year to year. Some weather patterns are more difficult to forecast than others. Typically, 1st and 2nd Quarters have higher lead times, while the 3rd and 4th Quarters,</p>	<p>There is a natural inter-annual variability for both lead time and accuracy. Typically, 1st and 2nd Quarters have higher lead times, while the 3rd and 4th Quarters, during the convective season, bring the annual average down. Spring/summer mesoscale events (e.g., thunderstorms) are more difficult to predict than</p>	<p>Review all warnings and storm data after each event to learn from past experiences. Use the information learned to improve forecast skill and product quality in the future.</p>

				<p>during the convective season, bring the annual average down. Spring/summer mesoscale events (e.g., thunderstorms) are more difficult to predict than larger synoptic scale systems; hence lower scores are expected in the 3rd and 4th quarters.</p>	<p>larger synoptic scale systems; hence lower scores are expected in the 3rd and 4th quarters.</p>	
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Section 4 Targets and Performance Summary

DOC Objective 15: Enhance weather, water, and climate reporting and forecasting

Measure 15c: Hurricane Forecast Track Error (48-Hour)

Measure Description	<p>The public, emergency managers, government institutions at all levels in this country and abroad, and the private sector use NOAA hurricane and tropical storm track forecasts to make decisions on life and property. This goal measures the difference between the projected location of the center of these storms and the actual location in nautical miles (nm) for the Atlantic Basin. The goal is computed by averaging the differences (errors) for all the 48-hour forecasts occurring during the calendar year. This measure can show significant annual volatility. Projecting the long-term - trend, and basing out-year goals on that trend, is preferred over making large upward or downward changes to the goals each year. Projecting the long-term trend and basing out-year goals on that trend is preferred over making large upward or downward changes to the targets. These targets are developed based on analysis of long term performance, thereby taking into account year-to-year natural variability. There has been an average 10 year downward trend in forecast track errors used to derive new lower GPRA targets.</p>					
Target and Performance Table						
	FY2007 Actual	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Target	FY2012 Target
	86	89	70	89	87	84
Comments on Changes to Targets	<p>Nature imposes large year-to-year variability in the number and difficulty of the forecast cases. We can often attribute increases or decreases in errors to the character of the storms and their environments in any given year after the fact rather than to any change in the performance of the operational forecast process. These targets are developed based on analyses of long-term (over a decade or longer) performance trends. Every few years, a new analysis of the long-term forecast trend is conducted. The most recent analysis suggested that the targets, last set in 2006, were too conservative.</p> <p>In 2009 NOAA received \$13M to address both hurricane track and intensity forecast challenges and this funding is expected to continue in the out years. As the efforts begun by this program become mature and advances in numerical weather prediction models are developed and implemented, we expect track forecasts to continue to improve. If this program is successful in accelerating the rate of forecast improvement (in spite of the theoretical limits of predictability noted above), then future targets will again be adjusted downward.</p>					
Relevant Program Changes	Program Changes	Title of Program Change				Exhibit 13 Page Number
	Yes	NOAA High Performance Computing				699
Validation & Verification Information	Data Source	Reporting Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken

	National Weather Service (NWS)/Tropical Prediction Center (TPC)	Annual	National Weather Service (NWS)/Tropical Prediction Center (TPC)	Evaluation of forecast track errors is very accurate, because the location of most tropical cyclones is well known. However, factors other than forecast performance can affect forecast errors, even on an annual-average basis. Some systems are inherently more difficult to forecast than others. For example, hurricanes are easier to forecast than tropical storms or tropical depressions; storms at low-latitudes are easier to forecast than those at high	None	NWS/TPC prepares a comprehensive annual forecast verification report on the performance of the official forecasts and the performance of the numerical guidance.
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				<p>latitudes. Thus the character of the season is a big driver in the value of this particular forecast performance measure.</p> <p>Out-year measures depend on a stable funding profile and assume new satellites, improved forecast models, new and continued research activities of the Hurricane Forecast Improvement Project (HFIP), and investments in critical observing systems.</p>		
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Section 4 Targets and Performance Summary

DOC Objective 15: Enhance weather, water, and climate reporting and forecasting

Measure 15d: Hurricane Forecast Intensity Error (48 hour)

Measure Description	<p>The public, emergency managers, government institutions at all levels in this country and abroad, and the private sector use NOAA tropical cyclone intensity forecasts to make decisions on life and property. This goal measures the difference between the projected intensity of these storms and the actual intensity in knots (kt) for Atlantic Basin tropical cyclones (i.e., tropical depressions, tropical storms, and hurricanes). The goal is validated by computing the average difference (error) for all the 48-hour forecasts occurring during a calendar year. Because tropical cyclones are relatively rare events, this measure can show significant annual volatility. As a consequence, projecting the long-term trend (over a decade or more) and basing out-year goals on that trend is preferred over making upward or downward changes to the targets on an annual basis.</p>					
Target and Performance Table						
	FY2007 Actual	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Target	FY2012 Target
	N/A	14	18	15	13	12
Comments on Changes to Targets	<p>FY08 was the first year for tropical cyclone forecast intensity as a performance measure. The target in FY08 was 14 and the actual was also 14. However, the FY09 target was 13 but the actual was 18. Failure to reach the target in 2009 can be attributed in part to high forecast difficulty in 2009; annual average official intensity forecast errors are highly correlated with forecast difficulty (e.g., strong storms are harder to forecast than weak storms, and storms that undergo rapid changes in intensity are harder to forecast than those whose intensity changes more gradually). It should be noted, however, that the targets were established based on the assumption that modeling advances would immediately lead to forecast improvements, even though there had been no change in intensity forecast accuracy over the previous two decades. The anticipated modeling advances have not yet occurred. It is reasonable to assume that until there is some modeling or conceptual breakthrough, annual official intensity errors are mostly going to rise and fall with forecast difficulty, and therefore routinely fail to meet targets (only once, in 2003, was the annual average intensity error as low as the current target of 13 kt).</p> <p>In 2009 NOAA received \$13M to address both hurricane track and intensity forecast challenges and this funding is expected to continue in the out years. The success of this effort is essential to meeting the very aggressive targets that have been established.</p>					
Relevant Program Changes	Program Changes	Title of Program Change				Exhibit 13 Page Number
	Yes	NOAA High Performance Computing				699
Validation & Verification Information	Data Source	Reporting Frequency	Data Storage	Internal Control	Data Limitations	Actions to be Taken

				Procedures	
	National Weather Service (NWS)/Tropical Prediction Center (TPC)	Annual	National Weather Service (NWS)/Tropical Prediction Center (TPC)	None	<p>Hurricane intensity, defined as the maximum 1-minute mean wind at an elevation of 10 m associated with the circulation of the cyclone, is a difficult quantity to measure. TPC intensity estimates are believed to be accurate to within about 10% (e.g., 8 kt for an 80 kt hurricane). The current targets are above, but beginning to approach, this level of uncertainty. While not a problem at present, significant downward adjustments to the targets will not be attainable (or verifiable) without advances in our ability to monitor tropical cyclones.</p> <p>Out-year measures depend on a stable funding profile and assume new satellites, improved forecast models, new and continued research activities of the Hurricane Forecast Improvement Project (HFIP), and investments in critical observing systems.</p>

Section 4 Targets and Performance Summary

DOC Objective 15: Enhance weather, water, and climate reporting and forecasting

Measure 15e: Accuracy (%) (Threat Score) of Day 1 Precipitation Forecasts

Measure Description	This performance measure tracks the ability of the weather forecasters of NOAA's Hydrometeorological Prediction Center to predict accurately the occurrence of one inch or more of precipitation (rain or the water equivalent of melted snow or ice pellets) twenty-four hours in advance across the contiguous U.S. Through this measure, the HPC focuses on relatively heavy amounts of precipitation, usually a half inch or more in a 24-hour period (short-term flood and flash flood warnings), because of the major safety and economic impacts such heavy precipitation can have in producing flooding, alleviating drought, and affecting river navigation.					
Target and Performance Table						
	FY2007 Actual	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Target	FY2012 Target
	31	33	30	35	30	31
Comments on Changes to Targets	<p>Actuals have shown a steady overall improvement trend from 24 in 1995 to 29 in 2009. The annual scores vary markedly around the trend line with some years being above the trend and some below it, greatly depending on the amount of geographic coverage of heavy precipitation associated with isolated thunderstorm systems during the year. In addition, the scores vary seasonally during the year for the same reason, with higher values generally occurring during the fall and winter when weather systems are generally larger and better defined and lower values occurring in the spring and summer when precipitation often is scattered and on a smaller geographic scale.</p> <p>During the next several years, NOAA will implement a number of numerical weather prediction (model) enhancements aimed at improving heavy precipitation forecasts, including increasing numerical model resolution and the sophistication of the formulations of physical processes in the models, increasing the number and accuracy of ensemble forecast members for both short- and medium-range forecast models, and improving the assimilation of satellite and other observational data used as the starting point for the numerical forecasts. HPC continues to show strong improvement over the model scores and its performance is closely linked to the performance of the models.</p>					
Relevant Program Changes	Program Changes	Title of Program Change				Exhibit 13 Page Number
	No					700
Validation & Verification Information	Data Source	Reporting Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
	National Weather Service/Hydro-	Monthly	HPC	The 48-year record of	The Threat Score varies from 0 (no	NOAA will implement planned

	<p>meteorological Prediction Center (HPC) and State Agencies</p>			<p>performance indicates there can be considerable variation in the performance measure from year to year. This variation is heavily dependent on the variation of weather regimes over the course of a year and from year to year. Scores are usually lower, for example, in years with considerable summertime precipitation not associated with tropical cyclones.</p>	<p>correct forecasts), to 100 when the forecast area exactly matches the observed area of 1 inch precipitation over the conterminous U.S. The scores vary seasonally during the year with higher values generally occurring during the fall and winter when weather systems are generally larger and more well defined and lower values occurring in the spring and summer when precipitation is scattered and on a smaller geographic scale.</p>	<p>weather observation and numerical modeling improvements along with ongoing research projects. The Hydrometeorological Testbed at HPC will be expanded to accelerate the transition of research and development advancements into the operational prediction of precipitation.</p>
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Section 4 Targets and Performance Summary

DOC Objective 15: Enhance weather, water, and climate reporting and forecasting

Measure 15f: Winter Storm Warnings - Lead Time (Hours)

Measure Description	A winter storm warning provides NOAA customers and partners advanced notice of a hazardous winter weather event that endangers life or property, or provides an impediment to commerce. Winter storm warnings are issued for winter weather phenomena like blizzards, ice storms, heavy sleet, and heavy snow. This performance indicator measures the accuracy and advance warning lead time of winter storm events. Improving the accuracy and advance warnings of winter storms enables the public to take the necessary steps to prepare for disruptive winter weather conditions.					
Target and Performance Table						
	FY2007 Actual	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Target	FY2012 Target
Lead Time (hours)	18	17	18	21	15	19
Accuracy (%)	90	89	90	90	90	90
Comments on Changes to Targets	<p>Due to an increased/improved observational network, better data assimilation, and deployment of higher resolution, more frequent and ensemble model forecasts, and extensive training, forecasters have had greater confidence to issue warnings with greater lead times. Also, coastal and buoy profilers enable forecasters to determine the temperature aloft over marine areas, which aids in precipitation type forecasting. Based on recent successes with longer lead times we have pushed the 2012 goal to 19 hours, respectively. We expect to transition to storm based warnings in a couple of years which may impact achievable lead times and we can revisit these goals at that time.</p> <p>Increase/Improve observational networks will provide input to newly deployed higher resolution models such as Weather Research and Forecasting (WRF) models. This will enable forecasters to obtain real time feedback on how much snow has fallen. Also, coastal and buoy profilers enable forecasters to determine the temperature aloft over marine areas, which aids in precipitation type forecasting. However, accuracy scores near 90% are near the best that can be expected given the variability of weather patterns and we expect to keep it consistent through 2012. We will be transitioning to storm based warnings in a couple of years which will decrease the size of the warned area and could negatively impact scores.</p>					
Relevant Program Changes	Program Changes	Title of Program Change				Exhibit 13 Page Number
-	Yes	NOAA High Performance Computing				688, 751
Validation & Verification Information	Data Source	Reporting Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken

	National Weather Service (NWS) Field Offices	Quarterly	NWS Headquarters, NWS Regional Headquarters, and the Office of Climate, Water, and Weather Services (OCWWS)	While long-term performance has shown a steady increase in forecast accuracy, inter-annual scores tend to fluctuate due to varying weather patterns from year to year. Some weather patterns are more difficult to forecast than others. Due to improved data assimilation and modeling resolution and frequency lead time has exceeded goals for the past several years	The number of winter storm events each fiscal year varies from 4,500 to 7,800. Forecasters perform better during large winter storm events due to consistency in model guidance, well defined winter storm radar images, and increased confidence based on winter storm reports. These three factors lead to longer lead times and higher accuracy. The peak level of winter storm events occurs December through March mainly in the second quarter. Storms that occur in the first quarter early in the winter season (October through December) are difficult to forecast due to	Review all warnings and storm data after each event to learn from past experiences. Use the information learned to improve forecast skill and product quality in the future.
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					<p>marginal cold air in low levels and local impacts of relatively warm water bodies, including oceans, bays, lakes, and rivers. Storms that occur in the third and fourth quarters (April through September) are rare and difficult to predict due to warming low levels and greater insulation which strongly influences daytime accumulations. Also in the West, some areas have considerable year to year and multi-year variability</p>	
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Section 4 Targets and Performance Summary

DOC Objective 15: Enhance weather, water, and climate reporting and forecasting

Measure 15g: Marine Wind - Percentage of Accurate Forecasts & Marine Wave Heights - Percentage of Accurate Forecasts

Measure Description	<p>This performance indicator measures the accuracy of wind speed forecasts, which are important for marine commerce. The measure represents the Percentage of Accurate Forecasts, and accuracy is defined in terms of error. For the marine wind forecast, if the error is less than 5 knots, the forecast is accurate. This measure was revised in FY07 from using a complex skill score that was difficult to deconstruct and analyze to reflect the individual wind speed and wave height components. Marine Wind: This measure was introduced in FY07. The old measure for marine wind accuracy was based upon a skill score. The actuals from FY06 and earlier years should not be compared to the FY07 and later year's performance statistics.</p>					
Target and Performance Table						
	FY2007 Actual	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Target	FY2012 Target
Marine Wind (Accuracy)	73	72	73	74	69	70
Marine Wave Heights	78	77	77	75	74	75
Comments on Changes to Targets	<p>The Marine Wind measure was introduced in FY07. The old measure for marine wind accuracy was based upon a skill score. The actuals from FY06 and earlier years should not be compared to the FY07 and later year's performance statistics. The new measure is based upon a percent correct. Marine wind speed forecast scores naturally vary (percent correct +/- 4% per year) due to fluctuations in the number of volatile wind speed conditions from year to year. Wind speed forecasts with an error margin of less than 5 knots are increasingly difficult to make as conditions increase from gale to storm to hurricane force speeds. In general, the more volatile the conditions, the greater the range in observed wind speeds, and the more difficult to forecast wind speeds. NOAA marine wind forecast targets: FY10 69%, FY11 69%, and FY12 70%.</p> <p>The Marine Wave Heights measure was introduced in FY07. The old measure for marine wave accuracy was based upon a skill score. The actuals from FY06 and earlier years should not be compared to FY07 and later year's performance statistics. The new measure is based upon a percent correct. Marine wave height forecast scores naturally vary (accuracy +/- 4% per year) due to fluctuations in the number of volatile wave height conditions from year to year. Wave height forecasts with an error margin of less than 2 feet are increasingly difficult to make as swell and wind-driven wave conditions increase and interact. In general, the more volatile the conditions, the greater the range in observed wave heights, and the more difficult to forecast wave heights. NOAA marine wave forecast targets: FY10 74%, FY11 74%, and FY12 75%.</p>					
Relevant Program Changes	Program Changes	Title of Program Change				Exhibit 13 Page Number
-	No					688

	Data Source	Reporting Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
<p>Validation & Verification Information</p>	<p>National Weather Service (NWS) Field Offices</p>	<p>Monthly</p>	<p>NWS Headquarters</p>	<p>Due to the large volume of data gathered and computed, documentation for the accuracy of forecast for wind and waves cannot be finalized until 1-2 months into the following fiscal year. Out-year measures depend on a stable funding profile and take into account new satellites, improved forecast models, new and continued research activities, investments in critical observing systems, and new and ongoing forecaster training. Within a Fiscal Year, scores drop in the late fall and winter then rise in late spring and</p>	<p>Marine wind speed forecast scores naturally vary (percent correct +/- 4% per year) due to fluctuations in the number of volatile wind speed conditions from year to year. Wind speed forecasts with an error margin of less than 5 knots are increasingly difficult to make as conditions increase from gale to storm to hurricane force speeds. In general, the more volatile the conditions, the greater the range in observed wind speeds, and the more difficult to forecast wind speeds.</p>	<p>NOAA will continue to enhance its marine observation network, upgrade new forecaster models, and continue new and ongoing forecaster training.</p>

				summer. This is due to more volatile marine winds in winter.		
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Section 4 Targets and Performance Summary

DOC Objective 15: Enhance weather, water, and climate reporting and forecasting

Measure 15h: Aviation Forecast Accuracy of Ceiling/Visibility (1 mi/500 ft to less than 3 mi/1000ft) & False Alarm Rate (%)

<p>Measure Description</p>	<p>Visibility and cloud ceiling forecasts are critical for the safety of aircraft operation. Accurately forecasting the occurrence of Instrument Flight Rule (IFR) conditions significantly improves general and commercial aviation flight planning capabilities, improving both flight safety and efficiency. Performance statistics recalculated for the past few years of data (FY05-FY10) uncovered a direct relationship between IFR accuracy and false alarm ratios and the percent frequency of occurrence of IFR conditions. The forecast frequency of IFR occurrence and the observed frequency of IFR occurrence are within 0.5% of each other, indicating that forecast errors are likely in the timing of onset and duration rather than solely event occurrence. Because the direct relationship exists, aviation services correlated likely performance levels to the percent frequency of IFR occurrence, and recommends performance metrics that account for IFR frequency and creates a logical performance standard for those areas with very little IFR occurrence and the warm or cool seasons. Performance metric goals for the accuracy and FAR are tied to the frequency of IFR occurrence as shown in the following table.</p> <table border="1"> <thead> <tr> <th>% Frequency Occurrence of IFR</th> <th>National POD/FAR Goals</th> </tr> </thead> <tbody> <tr> <td>>10</td> <td>65/38</td> </tr> <tr> <td>10</td> <td>63/39</td> </tr> <tr> <td>8</td> <td>58-62/42-45</td> </tr> <tr> <td>6</td> <td>57-60/42-45</td> </tr> <tr> <td>4</td> <td>56-59/44-46</td> </tr> </tbody> </table> <p>For those % Frequency Occurrence of IFR goals with multiple values the lower value Accuracy and higher value FAR are for the warm season and the higher accuracy and lower FAR values are for the cool season. An annual performance metric derives from an average of the monthly performance results anticipated from the latest climate forecast at the start of the measured year.</p>						% Frequency Occurrence of IFR	National POD/FAR Goals	>10	65/38	10	63/39	8	58-62/42-45	6	57-60/42-45	4	56-59/44-46
% Frequency Occurrence of IFR	National POD/FAR Goals																	
>10	65/38																	
10	63/39																	
8	58-62/42-45																	
6	57-60/42-45																	
4	56-59/44-46																	
<p>Target and Performance Table</p>																		
	<p>FY2007 Actual</p>	<p>FY2008 Actual</p>	<p>FY2009 Actual</p>	<p>FY2010 Actual</p>	<p>FY2011 Target</p>	<p>FY2012 Target</p>												
<p>Accuracy (%)</p>	<p>40</p>	<p>62</p>	<p>63</p>	<p>66</p>	<p>65</p>	<p>66</p>												
<p>False Alarm Rate (%)</p>	<p>61</p>	<p>39</p>	<p>38</p>	<p>36</p>	<p>41</p>	<p>41</p>												
<p>Comments on Changes to Targets</p>	<p>The greatest probability of IFR occurrence is found in the large-scale systems of the cool season. The much colder winter air masses create lower cloud condensation levels; translating into lower cloud ceilings. The increased visible moisture in the atmosphere from the cold air column's inability to absorb large quantities of vapor creates visual obstructions restricting horizontal visibility. The storms most prevalent during the warm</p>																	

season are small scale and meso-scale, and tend to have a warm core air mass. The warmth of the air column generally raises the cloud condensation level above IFR criteria. Stats-on-Demand data shows that minimum ceilings in thunderstorms range from >1500 feet to 3100 feet (MVF to low VFR). The incidence of IFR visibility is nearly nil during the summer because of the warm air column. Moisture that otherwise may lower visibility evaporates into the warmer air column, resulting in little or no visual impairment.

Performance data collected over the past four years shows that the probability of collecting predicting IFR is directly dependent on the amount of IFR occurring. Large scale synoptic storms with large stratiform cloud shields in the low levels, as found in winter storms, give the greatest IFR occurrence. Moderate and small scale systems, such as convection and warm tropical storms or their remnants, tend to have more cumuloform clouds that yield greatly reduced IFR occurrences. The potential to predict IFR depends on the amount of IFR actually present. Forecasters are predicting IFR conditions within 0.5% of the actual IFR occurrence. This means that aviation forecasters are maximizing the state-of-the-art tools and training available to them. At this point, until and unless research can create new, more precise and accurate forecast tools and models, forecasters have maximized their performance potential. *The best way to show continuing growth in forecaster performance is to tie the performance metric to the frequency that IFR conditions occur.*

During FY09 the accuracy goal was 64 and the actual performance was 63. The average percent frequency of occurrence of IFR during FY09 was 7.2 (which was the same as FY08 when the actual accuracy was 62). Currently during FY10 (which has been exceptionally stormy and wet) the average percent frequency of occurrence of IFR is 10.3, and the accuracy near 68 for most of the cool season. However with the onset of warm season, little IFR, conditions FY10 accuracy is decreasing rapidly. Accuracy is expected to be approximately 64 by year's end (goal 65). The FY11 and FY12 goals anticipate continued wet cool season conditions with high percent frequency of occurrence of IFR conditions, leading to an overall annual percent frequency of occurrence near 9 to 10%. If FY11 and FY12 are instead more average with 6 to 7% frequency of occurrence of IFR, then the actual performance will likely be in the range seen for FY06-FY08. Without an IFR Frequency of Occurrence of at least 10% for the entire FY performance measures for accuracy will be considerably lower than the goals shown above. In all the years the best measure of performance improvement was not accuracy, but the continued steady decline in false alarm rates. This trend is expected to continue, even as accuracy "flat-lines" due to reaching the technical limits imposed by the current state-of-the-art forecasting science.

Legacy aviation weather GPRA goals do not adequately reflect the impact of NOAA's NextGen program. Funding has been allocated within the program to develop new performance measures that will better represent program impacts. Among these is the developmental Weather Impacted Traffic Index (WITI), which combines weather forecast information with FAA traffic information to determine the impact of NWS forecast products on air traffic delays. This metric will be baselined over the coming years and target goals will be proposed that will show significant impact resulting from this investment. NOAA is also funding the development of the Network-Enabled Verification System (NEVS) to transition and enhance many of today's

	aviation performance measures. NEVS IOC is expected in 2013.					
Relevant Program Changes	Program Changes	Title of Program Change				Exhibit 13 Page Number
	No					688
Validation & Verification Information	Data Source	Reporting Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
	Nation Weather Service (NWS) Field Offices	Monthly by NWS Field Offices	NWS Headquarters and Office of Climate, Water, and Weather Services (OCWS)	Inter-annual scores tend to fluctuate due to varying weather patterns. Some patterns are more difficult to forecast than others. Month to month variability can swing from plus or minus 1% to plus or minus 15%, with season to season variability generally plus or minus 7% to plus or minus 10%, and year to year variability plus or minus 3% for both accuracy and FAR. At the same time the percent frequency of occurrence can vary plus or minus 10% or greater from year	IFR conditions occur much more frequently (by order of magnitude) during the late fall through early spring and are typically associated with winter weather. Performance metric goals tied to the frequency of occurrence of IFR conditions accounts for areas with little IFR (e.g., Pacific Region or the desert southwest) and differences between the warm and cool seasons. After accounting for the frequency of IFR occurrence, the overall performance of accuracy and	IFR conditions occur much more frequently (by order of magnitude) during the late fall through early spring and are typically associated with winter weather. Performance metric goals tied to the frequency of occurrence of IFR conditions accounts for areas with little IFR (e.g., Pacific Region or the desert southwest) and differences between the warm and cool seasons. After accounting for the frequency of IFR occurrence, the overall performance of accuracy and

				<p>to year, season to season, or month to month depending on weather patterns. Typically 3rd and 4th quarter scores during the convective season have lower accuracy and increased FAR scores than the 1st and 2nd quarter cool season months.</p>	<p>FAR variability is plus or minus 3 percent.</p>	<p>FAR variability is plus or minus 3 percent.</p> <p>Since Aviation Forecasters are already predicting IFR conditions within 0.5% of the actual frequency of occurrence, the skills and training needed to forecast IFR is at its peak for the current state-of-the-art of the science. The foreseeable adjustment to forecast performance now becomes an application of lead-time data as developed by researchers to metrics. The Aviation Services Branch will investigate various methods for apply the data, and develop a sound metric relating the amount of forecast overlap as shown by lead</p>
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						time calculations to the difference in the forecast and observed frequency of IFR occurrence. This would become a secondary metric supporting the existing POD and FAR GPRA measures.
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Section 4 Targets and Performance Summary

DOC Objective 16: Support climate adaptation and mitigation

Measure 16a: U.S. Temperature Forecasts (Cumulative Skill Score Computed Over the Regions Where Predictions are Made)

Measure Description	<p>This is a measure of skill of NOAA’s operational seasonal temperature forecasts where a higher numerical value for the measure implies an ability to better predict surface temperature variability over the U.S. Continued improvements in NOAA’s ability to predict climate variability are reflected in an increasing positive value for this measure. For each three month period, seasonal outlooks for U.S. surface temperature are produced by CPC and reported as either above normal, near normal, below normal or, where no definite seasonal guidance can be provided, equal chances. These forecasts are verified using a 48 month running mean of Heidke Skill scores computed for seasonal outlooks for each 3-month seasonal mean (e.g., January-February-March mean; February-March-April mean; March-April-May mean; and so on). It is calculated as follows: Heidke skill score: $S = ((c-e)/(t-e)) \times 100$, where c = number of grid points where forecast was correct and e = number of grid points expected to be correct by chance alone and t = total number of grid points where the forecast was made.</p> <p>http://www.cpc.noaa.gov/products/predictions/long_range/tools/briefing/seas_veri.grid.php</p>
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Target and Performance Table

	FY2007 Actual	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Target	FY2012 Target
	29	26	27.5	18	21	21

Comments on Changes to Targets	<p>This GPRA target is based on a 4-year running mean of the annual score. Some phenomena known to impact climate variability such as El Nino and La Nina affect this long-term average by skewing it up or down over the course of the four years. The targets for FY2011 and FY2012 were adjusted downward due to a delay in the implementation of the next generation of the climate forecasts system (CFS) at NCEP. The upgraded version of the CFS is anticipated to be placed into operations during the first quarter of FY11. The version will be run at higher resolution and is anticipated to contribute to improved scores in the future. Since the performance measure is a 4 year running average, it will take a few years before anticipated improvements to the individual seasonal scores significantly impact the 48 month running mean.</p> <p>These forecasts are verified using a 48 month running mean of prediction skill scores computed for seasonal outlooks for each 3-month seasonal mean (e.g., January-February-March mean; February-March-April mean; and so on). The addition of an objective consolidation tool in 2004 has increased scores toward levels previously reached during the strong La Nina of 1999-2000. The GPRA score is computed via an automated grid-based verification procedure. This technique verifies a gridded objective analysis of the forecast field against a gridded analysis of the observed verification field. This process treats the entire area of the lower 48 states objectively.</p>
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Relevant Program Changes	Program Changes	Title of Program Change	Exhibit 13 Page Number
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	No					637
Validation & Verification Information	Data Source	Reporting Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
	Forecast data, observations from U.S. Weather Forecast Offices, and from a cooperative network maintained by volunteers across the nation	Annual	NWS National Centers for Environmental Prediction	NOAA performs quality control on the observed data (for example, error checking, elimination of duplicates, and inter-station comparison) both at the CPC and U.S. Weather Forecast Office level. In 2005, NOAA implemented an objective verification procedure to minimize the impact of human errors in the computation of skill score.	Because of natural (and unpredictable) variability of climate regimes, the skill score can fluctuate considerably from one season to another. For example, for the periods influenced by a strong ENSO forcing, GPRA measure tends to be high. Lower scores occur during the periods when ENSO is in its neutral phase. For example, the FY06 actual was an anomaly as effects from the El Nino and La Nina dropped out of the 48 month averages.	None

Section 4 Targets and Performance Summary

DOC Objective 16: Support climate adaptation and mitigation

Measure 16b: Uncertainty of the North American (NA) carbon sink to better understand the contribution of human activities toward increasing atmospheric CO2 and methane

Measure Description	<p>In order to provide scientific guidance to policymakers concerned with managing emissions of carbon dioxide, NOAA needs to assess and quantify the source of carbon variability. This GPRA measure demonstrates the scientifically accepted level of confidence in carbon measurement that is needed to accurately evaluate levels of carbon emissions in North America. The uptake of atmospheric carbon (mainly as carbon dioxide) by ecosystems across North America is of the order of one billion tons per year. That is about 1/2 of the current emissions from burning fossil fuels on the continent. In order to be able to evaluate annual changes in this ecosystem uptake of carbon, we must improve our carbon measurements to a level of uncertainty that is about 1/3 of the total, or 300 million tons per year. Having this information to this degree of certainty or better will support better forecasts of future climate change and will provide verification for carbon dioxide emission reduction and mitigation efforts. Obtaining this minimum level of uncertainty requires the expanded observation network and improved modeling effort proposed here. The basis (flux estimates) for the measure is publicly available on the web (http://carbontracker.noaa.gov).</p>					
Target and Performance Table						
	FY2007 Actual	FY2008 Actual	FY2009 Actual	FY2010 Target	FY2011 Target	FY2012 Target
	400 M tons Carbon/Yr	400 M tons Carbon/Yr	400 M tons Carbon/Yr	400 M tons Carbon/Yr	400 M tons Carbon/Yr	380M tons Carbon/Yr
Comments on Changes to Targets						
Relevant Program Changes	Program Changes?	Title of Program Change				Exhibit 13 Page Number
	Yes	Carbon Observing and Analysis System				568, 587
Validation & Verification Information	Data Source	Reporting Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
	NOAA's Global Carbon Cycle Research Program	Annual	NOAA's Earth System Research Laboratory	Quality assurance and calibration against known standards performed by NOAA	Number of tall tower/aircraft sites and our ability to incorporate these data into advanced carbon models	None

Section 4 Targets and Performance Summary

DOC Objective 16: Support climate adaptation and mitigation

Measure 16c - Error in Global Measurement of Sea Surface Temperature

Measure Description	This measure is intended to document progress in accurately measuring the global sea surface temperature and reflects how improvements in ocean observations will decrease the uncertainty in global sea surface temperature measurements, which will ultimately play a role in calculations of the ocean-atmosphere exchange of heat and the heat storage in the global ocean. The sea surface, covering over 70% of the Earth surface, has a tremendous influence on global climate because it is where the atmosphere responds to the ocean, via the transfer of heat either to or from the atmosphere. Since sea-surface temperature is measured by buoys, ships, and satellites, this performance measure is well-suited as an indicator of the effectiveness of our integrated ocean observing system and the more accurate estimates of sea surface temperature and ocean heat content will improve our ability to respond to changes in the climate system. Success in this performance measure requires the maintenance and increase of in situ ocean sensors. The goal is to reach an indicator value of 0.2 degrees Celsius, which has been specified by the international Global Ocean Observing System (GOOS) as the required accuracy for measurement of sea surface temperature.					
Target and Performance Table						
	FY2007 Actual	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Target	FY2012 Target
	0.53 C	0.50 C	0.50C	0.50C	0.50C	0.50C
Comments on Changes to Targets	In addition to improving deployment of the drifting buoys over the last couple years, NOAA is collaborating with JAXA, the Japanese satellite service, to put a microwave sensor on their Global Change Observation Mission satellites (launches in 2011 and 2014), which would allow the observation system to maintain the error at 0.50 degrees C in FY12. Level or declining resources in FY11 precludes planning an improvement in the target.					
Relevant Program Changes	Program Changes	Title of Program Change				Exhibit 13 Page Number
-	No					633
Validation & Verification Information	Data Source	Reporting Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
	NOAA's Climate Program Office	Quarterly	NOAA's Climate Program Office	Quarterly reporting mechanism on uncertainty in sea surface temperature measurements	Number of deployed observing platforms in the global ocean	None

Section 4 Targets and Performance Summary

DOC Objective 16: Support climate adaptation and mitigation

Measure 16d - Annual percentage of U.S. states and territories that use NOAA climate information and services to improve decision-making in the face of a changing climate (Pilot performance measure)

Measure Description	This new measure replaces "Number of regionally and sectorally focused climate impacts and adaptation studies communicated to decision makers" to accurately measure a range of contributions to improve resilience to climate change. This replacement measure surpasses its predecessor by more broadly measuring NOAA's ability to quantify its contributions to constituents needing climate information. This measures how NOAA is improving the nation's capacity for resilience to climate change impacts, from drought to coastal impacts.					
Target and Performance Table						
	FY2007 Actual	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Target	FY2012 Target
	N/A	N/A	N/A	N/A	Baseline TBD	TBD
Relevant Program Changes	Program Changes?	Title of Program Change				Exhibit 13 Page Number
	No					N/A
Validation & Verification Information	Data Source	Reporting Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
	NOAA's Climate Program Office	Annually	NOAA's Climate Program Office	Tracking and reporting will be conducted for planned activities from at least four climate programs including RISA, SARP, NIDIS, and RCCs (other programs will be added as the measure is developed). Activities to be counted will include those that are adopted by	Potentially limited by ability to collect information from external sources such as state climatologists and other state and regional organizations.	This is a pilot measure. Terms and criteria must be defined. As the measure is developed, changes will be made to refine it. The measures will be developed in FY10 and baselined in FY11 with a target to start the measure in FY12.

				<p>states or regions for use in policies that directly address climate change impacts. An annual progress calculation in the demonstration phase will translate indicator data into target results. Assessment methods will be periodically reviewed for validation and verification.</p>		
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Section 4 Targets and Performance Summary

Measure 16e - Improved climate model performance and utility based on model advancements (planned milestones) and climate assessments benefited (Pilot performance measure).

Measure Description	<p>This measure will reflect the major advancements made in the long-term development of models and it will reflect the value of models as the outputs are used in major assessments such as the IPCC and the USGCRP National Assessment. Models are used to further research and discovery, are considered valuable for analysis in assessments, and improve the value of assessments for policy makers. A major outcome of this work will be improved regional forecast/ prediction/ projection products based on improved models and methodologies. This measure is based on the number of model advancements, model evaluations, and assessments and publications that use the model outputs.</p> <p>A. Model Advancements. GFDL, NCEP, and ESRL will count and report on the significant model development milestones met based on their model development plans. This will document the milestones established for each model, preferably milestones that achieve significant advances such as changes in parameterizations and model simulations completed for assessments, performance evaluations, and upgrades.</p> <p>B. Climate Assessments will be counted that use NOAA climate model outputs, or publications based on them, in their production, including regional and sectoral assessments. This component of the measure will indirectly measure value of the research performed and the information provided.</p>					
Target and Performance Table						
	FY2007 Actual	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Target	FY2012 Target
	N/A	N/A	N/A	N/A	Baseline TBD	TBD
Comments on Changes to Targets	The target will be the number of key milestones PLUS the number of major assessments and major publications that use climate model outputs.					
Relevant Program Changes	Program Changes?	Title of Program Change				Exhibit 13 Page Number
	No					N/A
Validation & Verification Information	Data Source	Reporting Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
	NOAA's Climate Program Office, GFDL, NCEP, and ESRL.	Annual (possibly quarterly)	NOAA's Climate Program Office	Tracking and reporting will be conducted for planned modeling activities in three areas: 1) Number of model advancements and 2) assessments and		This is a pilot measure. Terms and criteria must be defined. As the measure is developed, changes will be

				<p>publications that use the model outputs. An annual progress calculation in the demonstration phase will translate indicator data into target results. Assessment methods and criteria will be periodically reviewed for validation and verification.</p>		<p>made to refine it. The measures will be developed in FY10 and baselined in FY11 with a target to start the measure in FY12.</p>
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Section 4 Targets and Performance Summary

DOC Objective 16: Support climate adaptation and mitigation

Measure 16f - Percentage improvement in the Quality of Relationship between engagement personnel and the publics they serve.

Measure Description	Quality of Relationship is comprised of formal measures of these key indicators: awareness, trust, satisfaction, and usability. The goal is to capture the increasing Quality of Relationship for each of our priority publics as they access, understand, and integrate climate information, products, and services into the tools and algorithms they use for decision-making, ultimately resulting in an increase in the frequency and proficiency with which they use NOAA climate data and services in their lives and livelihoods. The measure will be a combination of surveys and focus groups to establish a baseline measurement and perform annual follow-up measurements to determine the annual percentage improvement in the Quality of Relationship as climate services are increased and improved.					
Target and Performance Table						
	FY2007 Actual	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Target	FY2012 Target
	N/A	N/A	N/A	N/A	Baseline - 0	10%
Comments on Changes to Targets	These targets are early estimates that will be refined when a robust analysis of the capabilities is completed relative to a baseline measure.					
Relevant Program Changes	Program Changes?	Title of Program Change				Exhibit 13 Page Number
	Yes	Climate Portal				601, 614
Validation & Verification Information	Data Source	Reporting Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
	NOAA's Climate Program Office	Annual	NOAA's Climate Program Office	Annual surveys will be conducted according to existing rules and established procedures. Assessment methods and criteria will be periodically reviewed for validation and verification.		This is a pilot measure. A baseline survey must be completed. As the measure is developed, changes will be made to refine it. The measures will be developed in FY10 and baselined in FY11 with a

							target to start the measure in FY12.
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Section 4 Targets and Performance Summary

DOC Objective 17: Develop sustainable and resilient fisheries, habitats, and species

Measure 17a - Fish Stock Sustainability Index (FSSI)

Measure Description	The FSSI tracks the rebuilding and maintaining of fish stocks at sustainable levels, along with critical components of NOAA's efforts to achieve outcomes, such as managing fish harvest rates and increasing knowledge about the status of fish stocks. It is calculated by assigning a score between 0 and 4 to each of 230 stocks selected for their importance to commercial and recreational fisheries and then adding the scores together. For more information: http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm .					
Target and Performance Table						
	FY2007 Actual	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Target	FY2012 Target
	524	535	565.5	582.5	586	600
Comments on Changes to Targets						
Relevant Program Changes	Program Changes?	Title of Program Change				Exhibit 13 Page Number
	Yes	Expand Annual Stock Assessments				280, 294, 319
Validation & Verification Information	Data Source	Reporting Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
	Stock assessments and status determinations	Quarterly	NMFS Stock Information System (SIS)	Results will be reported quarterly in a signed memo from the Fishery Management Program Manager to the NMFS Chief Financial Officer and are housed and made available in a database managed by the NMFS Office of Management and Budget; monthly	Results can only be reported when the SIS is updated with new information from the field	

				reporting on performance to NOAA Deputy Under Secretary		
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Section 4 Targets and Performance Summary

DOC Objective 17: Develop sustainable and resilient fisheries, habitats, and species

Measure 17b - Percentage of Priority Fish Stocks with Adequate Population Assessments and Forecasts

Measure Description	This measure tracks the percentage of priority fish stocks for which adequate assessments are available to determine the scientific basis for supporting and evaluating the impact of management actions. To reach this standard, which is defined as “Level III” by the Fisheries Stock Assessment Improvement Plan (SAIP), assessments must be based on recent quantitative information sufficient to determine current stock status (abundance and mortality) relative to established reference levels and to forecast stock status under different management scenarios. This measure covers the same 230 fish stocks tracked by the FSSI.					
Target and Performance Table						
	FY2007 Actual	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Target	FY2012 Target
	55.7% (128/230)	56.1% (129/230)	59.1% (136/230)	57.4% (132/230)	60.4% (139/230)	60.4% (139/230)
Comments on Changes to Targets	The FY 2010 actual has been revised from 58.3% to 57.4% due to one stock with an expired assessment that had been overlooked and one stock for which the assessment was rejected. Both stocks are scheduled for assessment in FY 2011, so this should not affect the likelihood of achieving the FY 2011 target.					
Relevant Program Changes	Program Changes?	Title of Program Change				Exhibit 13 Page Number
	Yes	Expand Annual Stock Assessments				280, 294, 319, 345, 944, 961
Validation & Verification Information	Data Source	Reporting Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
	Stock assessment reports	Quarterly	NMFS Stock Information System (SIS)	Science Advisor and reported quarterly in a signed memo from the Ecosystem Observations Program Manager to the NMFS Chief Financial Officer and are housed and made available in a	Results can only be reported when the SIS is updated with new information from the field	

				database managed by the NMFS Office of Management and Budget; quarterly reporting on performance to NOAA Deputy Under Secretary		
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Section 4 Targets and Performance Summary

DOC Objective 17: Develop sustainable and resilient fisheries, habitats, and species

Measure 17c - Percentage of Protected Species Stocks with Adequate Population Assessments and Forecasts

Measure Description	<p>This measure tracks the percentage of protected species stocks for which adequate assessments are available to determine the scientific basis for supporting and evaluating the impact of management actions. To reach this standard, which is defined as “Level III” by the Protected Species Stock Assessment Improvement Plan (SAIP), assessments must be based on recent quantitative information sufficient to determine current stock status (abundance and mortality) relative to established reference levels and to forecast stock status under different management scenarios. This measure covers the protected species stocks covered by MMPA or listed under ESA. The number of such stocks can change as new species are listed and as new stocks of listed species and marine mammals are identified. The number has increased from 230 in FY 2005 to 392 in FY 2011.</p>					
Target and Performance Table						
	FY2007 Actual	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Target	FY2012 Target
	26.6% (64/241)	25.2% (61/242)	29.8% (74/248)	20.1% (75/373)	18.6% (73/392)	21.9% (86/392)
Comments on Changes to Targets	<p>The number of protected species stocks increased from 373 in FY 2010 to 392 in FY 2011.</p>					
Relevant Program Changes	Program Changes?	Title of Program Change				Exhibit 13 Page Number
	Yes	Protected Resources Stock Assessments				944, 961
Validation & Verification Information	Data Source	Reporting Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
	ESA status reviews	Quarterly	Excel spreadsheet maintained by NMFS Office of Protected Resources	Science Advisor and reported quarterly in a signed memo from the Ecosystem Observations Program Manager to the NMFS Chief Financial Officer and are housed and made	Results can only be reported when the SIS is updated with new information from the field	A statement of work to develop the existing requirements table into a working SIS module to house protected species data has been drafted and is under review

				available in a database managed by the NMFS Office of Management and Budget; quarterly reporting on performance to NOAA Deputy Under Secretary		
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Section 4 Targets and Performance Summary

DOC Objective 17: Develop sustainable and resilient fisheries, habitats, and species

Measure 17d - Number of Protected Species Designated as Threatened, Endangered or Depleted with Stable or Increasing Population Levels

Measure Description	This measure tracks progress at achieving partial recovery of endangered, threatened or depleted protected species under the jurisdiction of the National Marine Fisheries Service. These species include those listed as threatened or endangered under the Endangered Species Act (ESA) as well as those marine mammal species listed as “depleted” under the Marine Mammal Protection Act. Recovery of threatened, endangered or depleted species can take decades, so while it may not be possible to recover or de-list a species in the near term, progress can be made to stabilize or increase the species population. For some, it is trying to stop a steep decline, while for others it is trying to increase their numbers. There are currently 72 species designated as threatened, endangered, or depleted.					
Target and Performance Table						
	FY2007 Actual	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Target	FY2012 Target
	26	24	25	29	28	30
Comments on Changes to Targets						
Relevant Program Changes	Program Changes?	Titles of Program Changes				Exhibit 13 Page Number
	Yes	Fisheries Habitat Restoration				241, 319, 330
Validation & Verification Information	Data Source	Reporting Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
	MMPA stock assessment reports and ESA status reviews	Annual	Excel spreadsheet maintained by NMFS Office of Protected Resources	Results are reported quarterly in a signed memo from the Protected Species Program Manager to the NMFS Chief Financial Officer and are housed and made available in a database	MMPA stock assessment reports are updated only once a year and ESA status reviews are updated only every one to five years depending on priority and fund availability	The existing requirements table is being developed into a working SIS module to house protected species data using technical assistance from NESDIS-NODC.

				managed by the NMFS Office of Management and Budget; quarterly reporting on performance to NOAA Deputy Under Secretary		
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Section 4 Targets and Performance Summary

DOC Objective 17: Develop sustainable and resilient fisheries, habitats, and species

Measure 17e – Number and Percentage of Recovery Actions Ongoing or Completed

Measure Description	This measure tracks progress of ongoing or completed recovery actions (including Priority 1 actions needed to prevent extinction) included in National Marine Fisheries Service approved recovery plans for species listed as threatened or endangered under the Endangered Species Act (ESA). Recovery actions are those actions found to be necessary to remove species from the ESA. Actions may include items that can be completed in a year or other actions, including monitoring, that may take many years to complete or be ongoing. Recovery of threatened or endangered species is a gradual process that can take decades, and completed recovery actions can show incremental progress made in achieving recovery.					
Target and Performance Table						
	FY2007 Actual	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Target	FY2012 Target
	NA	NA	NA	TBD	NA	TBD
Comments on Changes to Targets	Due to the large number of recovery actions, NOAA will create and maintain databases to track implementation of recovery actions. NOAA foresees being able to provide an FY 2010 Actual and FY 2012 Target for this measure by July 2011.					
Relevant Program Changes	Program Changes?	Titles of Program Changes				Exhibit 13 Page Number
	No					N/A
Validation & Verification Information	Data Source	Reporting Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
	Existing sources of data including the Recovery Online Activity Reporting (ROAR) System	Quarterly	Database maintained by the U.S. Fish and Wildlife Service and Excel spreadsheet maintained by NMFS	Results are reported quarterly to the NMFS Chief Financial Officer and made available to the NOAA Deputy Under Secretary	NMFS will require Recovery Coordinators to update Recovery Actions in ROAR quarterly	Complete MOU with FWS to become partner in ROAR. Work with FWS to modify ROAR to allow for more streamlined data entry. Enter data.

Section 4 Targets and Performance Summary

DOC Objective 17: Develop sustainable and resilient fisheries, habitats, and species

Measure 17f - Number of Habitat Acres Restored

Measure Description	NOAA restores habitat areas lost or degraded as a result of development and other human activities, as well as specific pollution incidents and sources. Activities are geared toward NOAA trust resources found across the marine environment, including the Great Lakes region, and supportive of anadromous fish species. The intent of this measure is to summarize or project the geographic area over which ecosystem function has been or will be improved as the direct result of habitat restoration efforts.					
Target and Performance Table						
	FY2007 Actual	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Target	FY2012 Target
	5,974	11,254	9,232	5,083	73,000 (4,000 + 69,000 PCSRf)	78,450 (4,450 + 74,000 PCSRf)
Impact of Recovery Funds	N/A	N/A	N/A	1,824	4,888	2,007
Adjusted Targets reflecting Original and Recovery Act Funds	5,974	11,254	9,232	6,907	77,888	80,457
Comments on Changes to Targets	The FY 2012 target reflects acres restored with funds from the Pacific Coastal Salmon Recovery Fund (PCSRF) as well as the NOAA Habitat Program. Of the total, 74,000 acres will be restored with PCSRf funds, and the remaining 6,457 will be restored with Restoration Center funds, including Recovery Act funds. This target has been revised to include a decrease in the NOAA Habitat Program target and a significant increase in the PCSRf target for acres restored. The reduction in the NOAA Habitat Program target is a result of increasing complexity of projects, reduced contributions from grantees and other organizations, and the requested decrease for the Great Lakes Habitat Restoration Program (a reduction of 75).					
Impact of Recovery Act Funds	Additional acres targeted for restoration with Recovery Act funds are shown above.					
Relevant Program Changes	Program Changes?	Title of Program Change				Exhibit 13 Page Number
	Yes	Fisheries Habitat Restoration				328, 330
Validation & Verification Information	Data Source	Reporting Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
	Interim and	Quarterly	The	Results are	Data is primarily provided	

	final progress reports from each project		Restoration Center Database (RCDB)	reported quarterly in a signed memo from the Habitat Program Manager to the NMFS Chief Financial Officer and are housed and made available in a database managed by the NMFS Office of Management and Budget; quarterly reporting on performance to NOAA Deputy Under Secretary.	by grantees	
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Section 4 Targets and Performance Summary

DOC Objective 17: Develop sustainable and resilient fisheries, habitats, and species

Measure 17(HPPG) - Ensure that all 46 federal fishery management plans have required catch limits to end overfishing in place by the end of 2011

Measure Description	This measure tracks the number of federal fishery management plans with required annual catch limits (ACL) and accountability measures to end overfishing in place by the end of 2011. The Magnuson-Stevens Fishery Conservation and Management Act requires annual catch limits for all managed fish stocks by December 31, 2011, with certain exemptions. NOAA tracks the status of ACL implementation using information from the eight regional Fishery Management Councils and NOAA Fisheries regional offices. Congress established the fishery management process and the role of the Fishery Management Councils in developing fishery management plans.					
Target and Performance Table						
	FY2007 Actual	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Target	FY2012 Target
	0	0	0	5	23	46
Comments on Changes to Targets						
Relevant Program Changes	Program Changes?	Title of Program Change				Exhibit 13 Page Number
	No					N/A
Validation & Verification Information	Data Source	Reporting Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
	Stock assessments and status determinations	Quarterly	NMFS Stock Information System (SIS)	Results will be reported quarterly in a signed memo from the Fishery Management Program Manager to the NMFS Chief Financial Officer and are housed and made available in a database managed by the	Results can only be reported when the SIS is updated with new information from the field	

				NMFS Office of Management and Budget; monthly reporting on performance to NOAA Deputy Under Secretary		
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Section 4 Targets and Performance Summary

DOC Objective 17: Develop sustainable and resilient fisheries, habitats, and species

Measure 17 (HPPG) - Reduce the number of stocks subject to overfishing to zero by the end of 2011

Measure Description	This measure tracks the number of nonexempt overfishing stocks not being fished under an annual catch limit. Most managed fish stocks are required to have annual catch limits (ACLs) in place by December 31, 2011, with exceptions for international stocks, stocks determined to be ecosystem components, and stocks with a 1-year lifecycle. Annual catch limits are expected to end overfishing of stocks currently subject to overfishing. Assessments in future years will confirm that overfishing has ended.					
Target and Performance Table						
	FY2007 Actual	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Target	FY2012 Target
	35	33	30	14	0	0
Comments on Changes to Targets						
Relevant Program Changes	Program Changes?	Title of Program Change				Exhibit 13 Page Number
	No					N/A
Validation & Verification Information	Data Source	Reporting Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
	Stock assessments and status determinations	Quarterly	NMFS Stock Information System (SIS)	Results will be reported quarterly in a signed memo from the Fishery Management Program Manager to the NMFS Chief Financial Officer and are housed and made available in a database managed by the NMFS Office of Management and Budget; monthly	Results can only be reported when the SIS is updated with new information from the field	

				reporting on performance to NOAA Deputy Under Secretary		
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Section 4 Targets and Performance Summary

DOC Objective 18: Develop Sustainable Coastal Communities and Economies

Measure 18a - Annual number of Coastal, Marine, and Great Lakes Ecological Characterizations that Meet Management Needs

Measure Description	<p>Sound management of coastal, marine, and Great Lakes ecosystems require scientifically based information on their condition. To provide this information, ecosystem characterizations are: 1) inclusive of the identification of the ecosystem boundaries, spatial extent, and biological, chemical, and physical characteristics that improve understanding of the history, current state, and future condition of ecosystems, cornerstones to ecosystem-based approaches to management; 2) the basis for many coastal and ocean forecasts, assessments, and management plans; and 3) conducted in response to user community demand and priorities, including NOAA management programs, significance of issue, and consequences of management action or inaction. Key parameters for characterizing conditions and developing assessments of their present “health” will be identified with the key indicator being characterizations <i>that meet management needs</i> (whether conducted in essential fish habitat, National Marine Sanctuaries, National Estuarine Research Reserves, the Great Lakes, the depths of the oceans, the coastal zone, and coral reef ecosystems, where there are different management needs and associated ecological characterizations). “Management” is defined as Federal, state, local, regional, territorial, or other entities that need accurate, useful data to make science-based, ecologically sound decisions when conducting comprehensive ocean and coastal planning and management, including coastal and marine spatial planning multiple uses of ocean and coastal resources. As a result, the American public can better improve the long-term protection and management of coastal, marine, and Great Lakes resources.</p>
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Target and Performance Table

	FY2007 Actual	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Target	FY2012 Target
	27	45	50	48	50	51

Comments on Changes to Targets	<p>Performance targets are higher in the out-years due to place-based investments for ecological characterizations serving coastal communities conducting comprehensive ocean and coastal planning and management of ocean and coastal resources for long-term protection.</p>
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Relevant Program Changes	Program Changes	Title of Program Change	Exhibit 13 Page Number
	Yes	Coastal Ecosystem Science	106, 154

Validation & Verification Information	Data Source	Reporting Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
	Characterizations focus on ecosystem sites: National Marine Sanctuaries,	Annual	Metadata from all contributing sources to the measure are managed in a	Results are reported to NOAA Chief Financial Officers; quarterly	NOAA focuses on protected areas or areas where NOAA has a clear	

	<p>National Estuarine Research Reserves, coral reef ecosystems, the coastal zone, Great Lakes, essential fish habitat, ecological species units, and unexplored areas.</p>		<p>secure NOS database for annual milestones and annual and long-term performance measures. Changes to reporting data require approval by the NOS administrator (managed by an email workflow approval system).</p>	<p>reports on performance data are submitted to the NOAA Deputy Under Secretary.</p>	<p>management mandate. NOAA works to identify key parameters for characterizing their conditions and develop assessments of their present health. Characterizations from all contributors are being tracked in this new measure in addition to criteria defining the indicator of what meets management needs for each ecosystem site because characterizations vary temporally and geographically.</p>	
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Section 4 Targets and Performance Summary

DOC Objective 18: Develop Sustainable Coastal Communities and Economies

Measure 18b - Cumulative number of coastal, marine and Great Lakes issue-based forecasting capabilities developed and used for management

Measure Description	NOAA's discrete forecast models allow resource managers to: 1) make decisions based on predicted environmental and socioeconomic impacts related to a particular issue; 2) use issue-based forecasts to predict the impacts of a single ecosystem stressor (e.g., climate change, extreme natural events, pollution, invasive species, and land and resource use) and 3) evaluate the potential options to manage those stressors to fulfill the ultimate goal for resource managers to use NOAA's forecasts to better manage ecosystem use, condition, and productivity. These forecasts will be based on field and laboratory studies, existing data, and models predicting environmental conditions under different scenarios and will have capabilities specific to a geographic area and be counted for each ecosystem as they become operational. For example, harmful algal bloom forecasts in the Gulf of Mexico and Gulf of Maine are two separate forecast capabilities and similarly, multiple, distinct forecast capabilities could be counted within a single ecosystem (i.e., harmful algal blooms, pink shrimp harvest, and hypoxia –all in the Gulf of Mexico). "Management" is defined as Federal, state, local, regional, territorial, or other entities that need accurate, useful data to make science-based, ecologically sound decisions when conducting comprehensive ocean and coastal planning and management, including coastal and marine spatial planning multiple uses of ocean and coastal resources. As a result, the American public can better improve the long-term protection and management of coastal, marine, and Great Lakes resources.					
Target and Performance Table						
	FY2007 Actual	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Target	FY2012 Target
	35	38	41	42	45	46
Comments on Changes to Targets	FY 2012 target was adjusted to include a new harmful algal bloom forecast.					
Relevant Program Changes	Program Changes	Title of Program Change				Exhibit 13 Page Number
	No					106
Validation & Verification Information	Data Source	Reporting Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
	Components that produce forecasting capabilities [National Ocean	Annual	Metadata from all contributing sources to the measure is managed in a	Results are reported to NOAA Chief Financial Officers; quarterly	Forecasting capabilities under development focus on 1) habitat impacts	NOAA will prioritize its efforts in developing new forecast

	<p>Service's (NOS) National Centers for Coastal Ocean Science (NCCOS) and the Oceans and Human Health Initiative; three programs of NOAA's Oceanic and Atmospheric Research (OAR) Sea Grant, Atlantic Oceanographic and Meteorological Laboratory (AOML, in part), and Great Lakes Environmental Research Laboratory (GLERL)]</p>		<p>secure NOS database for annual milestones and annual and long-term performance measures. Changes to reporting data require approval by the NOS administrator (managed by an e-mail workflow approval system).</p>	<p>reports on performance data are submitted to the NOAA Deputy Under Secretary.</p>	<p>from different types of human activity, such as land use; 2) recovery of ecosystem function once habitat restoration efforts have been implemented; and 3) NOAA Fisheries models that predict resource sustainability, such as for managed fisheries and protected species.</p>	<p>capabilities and facilitating their transition to operational status based on user community priorities, including those for NOAA management, adequacy of data, significance of issue, and consequences of management action/inaction.</p>
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Section 4 Targets and Performance Summary

DOC Objective 18: Develop Sustainable Coastal Communities and Economies

Measure 18c - Percentage of Tools, Technologies, and Information Services That are Used by NOAA Partners/Customers to Improve Ecosystem-based Management

Measure Description	<p>This measure tracks NOAA's success in providing tools, technologies, and information services such as those for coastal and marine resource managers that enable progress toward the principles of ecosystem-based management (considering ecological, economic, social, and security concerns) for coastal, marine, and Great Lakes ecosystems. By cataloging and tracking each fiscal year the existing and new tools, technologies, and information services authorized and developed to meet stakeholders' needs (50 to 100), NOAA encourages their completion and use to advance NOAA's overarching strategic principle of ecosystem-based management. NOAA can also then ensure investments in the most effective programs and products for the Nation. NOAA partners and customers include Federal, state, local and tribal authorities who make decisions affecting resources in the U.S. coastal zone, and other users impacting the condition of coastal ecosystems (e.g., private industry). Actuals are derived by dividing the number of tools/services developed by the end of the year by the number proposed at the beginning of the year. Targets are established based on historical patterns and the amount of funds being requested. Services can include on-line courses for managers, enhanced websites, broadcasts of live events, and workshops and other training techniques. New tools are developed frequently. Every year NOAA works with its partners and customers to identify ways to improve our products and services for ecosystem managers. Benefits of better management of the Nation's coastal, marine, and Great Lakes resources accrue to all citizen's through sustainable ecosystems that provide jobs, products and services that are unique to coastal and ocean areas.</p>					
Target and Performance Table						
	FY2007 Actual	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Target	FY2012 Target
	85%	86%	86%	88%	87%	88%
Comments on Changes to Targets	<p>FY 2012 targets reflect increased performance due to NOAA's increased investment in Integrated Ocean and Coastal Observations marine sensors and the Oceans and Human Health Initiative increase to advance coastal ecosystem science, as well as increases to Sea Grant to integrate research with research delivery.</p>					
Relevant Program Changes	Program Changes	Title of Program Change				Exhibit 13 Page Number
	Yes	IOOS (Marine Sensors) NCCOS (Oceans and Human Health Initiative)				101
Validation & Verification Information	Data Source	Reporting Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
	NOAA's Line	Annual	Each Line Office	Use values will	NOAA needs to	A secure central

	<p>Offices (OAR and NOS) executing the NOAA programs through the Strategic Plan goal/program structure.</p>		<p>has an internal secure system for tracking the data contributions.</p>	<p>be reported by program offices as X number of tools, technologies, and information services (TTIS) used out of X number of TTIS provided. Each Line Office will report total annual values to a central repository where a single percentage value will be determined and archived in a secure repository. Data is managed in a decentralized system by contributing line offices with validation and verification on any partner for TTIS to ensure no double counting of data.</p>	<p>ensure tracking systems are secure and data is validated and verified.</p>	<p>NOAA repository for matrixed measures is under development for improved management and tracking purposes.</p>
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Section 4 Targets and Performance Summary

DOC Objective 18: Develop Sustainable Coastal Communities and Economies

Measure 18d - Annual Number of Coastal, Marine, and Great Lakes Habitat Acres Acquired or Designated for Long-term Protection.

Measure Description	NOAA protects and restores key habitats that provide critical ecosystem functions through and in support of the statutory responsibilities to manage and steward coastal and ocean resources. These habitats support the health of endangered or threatened species and essential fish habitat, reduce coastal pollution, buffer the impacts of coastal storms and flooding, and provide the public with recreational access to the coast among other societal or economic benefits. NOAA maintains the health of coastal, marine and Great Lakes habitats by designating and managing important areas for long-term conservation and by providing support to state and local governments to protect additional key habitats by purchasing land from willing sellers. This <i>long-term protection</i> measure tracks the number of acres acquired with NOAA funds by state or local government agencies from willing sellers particularly through the Coastal and Estuarine Land Conservation Program (CELCP) and Coastal Zone Management Program (CZMP), and the number of acres designated for long-term protection by NOAA or by state partners, such as through the Office of National Marine Sanctuaries Program (ONMS) and National Estuarine Research Reserve System (NERRS). In FY 2010, NOAA protected acres through CELCP with funds from EPA's Great Lakes Restoration Initiative (GLRI).					
Target and Performance Table						
	FY2007 Actual	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Target	FY2012 Target
Funds	3,020	6,219	2,246 acres verified for CELCP	21,341 total (21,170 for CELCP and 171 for GLRI through CELCP)	2, 750 for CELCP+GLRI; 16,697 for NERRS Total: 19,447	6,550 (CELCP)
Comments on Changes to Targets	<p>The FY 2011 and 2012 targets reflect the acreage of projects that are expected to be completed in these fiscal years. However, because the duration of project grants may range from 1-3 years, these targets include projects that were funded in previous years (e.g., FY2008-2010). It is too early to determine which of the FY2011 projects will be selected for funding (subject to FY2011 appropriations) and when the project grants will be awarded.</p> <p>The FY 2012 target of 5,300 acres reported for this measure in the budget submission reflects the estimated number of acres that could be acquired with the requested \$25 million level of investment each year from FY2012-2016. This is an estimate. The actual number can vary depending on cost and acreage for each project selected for funding through the competitive process.</p>					

Relevant Program Changes	Program Changes	Title of Program Change				Exhibit 13 Page Number
	Yes	<ul style="list-style-type: none"> - Coastal Estuarine Land Conservation Program (PAC) - National Estuarine Research Reserve (PAC) 				196, 198
Validation & Verification Information	Data Source	Reporting Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
	<p>The cumulative total represents data on acres from the National Estuarine Research Reserve (NERRS) Program; National Marine Sanctuaries Program; and the Coastal and Estuarine Land Conservation Program. The APP targets show acres in the year the acquisition is completed, while the budget narrative shows the acres as the # that will be acquired in any future year with that year's</p>	Annually	<p>Metadata from all contributing sources to the measure is managed and stored in an Excel spreadsheet with limited access. The final performance data reported annually in performance reports is managed in a secure NOS database for annual milestones and annual and long-term performance measures. Changes to reporting data require approval by the NOS administrator (managed by an e-mail workflow approval system).</p>	<p>Results are reported annually to the NOAA Chief Financial Officers for approval; monthly reports on performance data are submitted to the NOAA Deputy Under Secretary.</p>	<p>The goal for the long-term protection indicator is variable, as the yearly target can vary from hundreds to thousands of acres each year. For example, the initial designation or acquisition for a new reserve or sanctuary may add hundreds of thousands of acres in one year, while in other years acquisition may result in several hundred or thousand acres protected. Other limitations are the timeliness of reporting by grant recipients, accuracy of conversion from hectares to acres for some data, and the time delay between funding and completion.</p>	<p>Since this measure does not capture all NOAA's activities to protect habitat, NOAA eventually plans to expand the measure in order to capture the CZM program contributions. NOAA is looking at the feasibility of further harmonizing methodologies used among contributing program components.</p>

	<p>funding. For example, they estimate that the FY 2012 \$25M will acquire ~5,300, but the actual acquisition could occur in FY 2011, 12 or 13, while the APP FY 2012 target represents projects projected to complete that year and could include projects funded in FY 08 - FY 10 (that are just coming to a close).</p>					
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Section 4 Targets and Performance Summary

DOC Objective 18: Develop Sustainable Coastal Communities and Economies

Measure 18e - Percentage of U.S. coastal states and territories demonstrating 20% or more annual improvement in resilience capacity to weather and climate hazards (%/yr.)

Measure Description	This measure replaces "Cumulative Percentage of U.S. Shoreline and Inland Areas that Have Improved Ability to Reduce Coastal Hazard Impacts" to accurately measure a range of contributions to address coastal community risk, vulnerability, and resilience to coastal hazards. This replacement measure surpasses its predecessor by broadly measuring NOAA's ability to quantify its contributions to this important goal across NOAA's coastal programs, measuring how NOAA is improving the nation's capacity for resilience to hazards and is contributing significantly to NOAA's efforts to improve integration of its coastal programs, and expanding beyond the three coastal integration programs providing inputs to the measure (CSC, OCRM, and Sea Grant).
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Target and Performance Table

	FY2007 Actual	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Target	FY2012 Target
Funds	N/A	N/A	N/A	29% (pilot)	30	36%
Comments on Changes to Targets						
Relevant Program Changes	Program Changes	Title of Program Change				Exhibit 13 Page Number
-	Yes	Preparing coastal communities for climate hazards				101,133, 528
Validation & Verification Information	Data Source	Reporting Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
	National Ocean Service (NOS) Coastal Services Center (CSC), and Office of Ocean and Coastal Resource Management (OCRM) Oceanic and Atmospheric Research (OAR) National Sea Grant	Annual measure that is reported quarterly	NOS and OAR will collect information, conduct assessments, and store data.	A new Coastal Resilience Report Card assembles and tracks data to create a cohesive performance audit to track coordinated results at state and local levels. An annual progress calculation	NOAA established an accurate performance baseline in FY 2010 for the measure's permanent data collection and validation and verification processes. An advisory group was established to provide	A NOAA team will continue to engage state and local partners to critique and improve data collection, verification, and reporting for the measure.

	College Program (NSGP).			<p>translates indicator data into statistically valid annual improvement percentages. The annual progress calculation is the formula for determining whether or not a coastal state meets the 20% improvement target. The calculation defines improvement as either 1) the percentage of a state's coastal jurisdictions pursuing successful resilience efforts or 2) the percentage of a state's coastal population impacted by successful resilience efforts. The 20% improvement target was an appropriately ambitious goal.</p>	<p>customer input on collection and validation processes to encourage effective use of existing data sources and survey mechanisms where possible and to avoid burdensome reporting. NOAA's social science expertise means the potential use of proxy data sources, customer survey feedback, and statistical sampling techniques are scientifically grounded and statistically defensible. Based on results from NOAA supported resilience projects and activities, it is estimated that 8</p>	
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				<p>Assessment methodologies will be peer reviewed for validation and verification performance by the NOAA Deputy Under Secretary quarterly and by the Department of Commerce through periodic audits.</p>	<p>of the 35 coastal states and territories meet the preliminary 20% resilience improvement target. This baseline estimate was adjusted for FY 2010 to account for: 1) revisions to the resilience improvement calculation and/or 2) an assessment of results in coastal states.</p>	
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Section 4 Targets and Performance Summary

DOC Objective 18: Develop Sustainable Coastal Communities and Economies

Measure 18f: Reduce the Hydrographic Survey Backlog Within Navigationally Significant Areas (square nautical miles surveyed per year)

Measure Description	NOAA conducts hydrographic surveys to determine the depths and configurations of the bottoms of water bodies, primarily in U.S. waters significant for navigation. This activity includes the detection, location, and identification of wrecks and obstructions with side scan and multi-beam sonar technology. NOAA uses the data to produce nautical charts in a variety of formats for safe and efficient navigation, and in addition to the commercial shipping industry, other user communities that benefit include recreational boaters, the commercial fishing industry, port authorities, coastal zone managers, marine spatial and emergency planners.					
Target and Performance Table						
	FY2007 Actual	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Target	FY2012 Target
Funds	3,198	2,127	2,745	2,515	3,200	3,250
Impact of Recovery Funds	N/A	N/A	N/A	1,880	N/A	N/A
Adjusted Targets reflecting Original and Recovery Act Funds	N/A	N/A	3,000	4,395	N/A	N/A
Comments on Changes to Targets						
Impact of Recovery Act Funds	The performance from these ARRA funds impacted FY 2009 and FY 2010, but for the purposes of reporting, NOAA reported these separately from the overall measure to collect hydrographic survey data for navigation.					
Relevant Program Changes	Program Changes	Title of Program Change				Exhibit 13 Page Number
	Yes	Integrated Ocean and Coastal Mapping				78, 88, 944
Validation & Verification Information	Data Source	Reporting Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
	Progress reports on data collected from hydrographic survey platforms.	Monthly	National Ocean Service maintains hydrographic survey performance data at NOAA Coast Survey's Hydrographic	National Ocean Service applies its established verification and validation methods. The measure has a +/- 50 square	NOAA-owned ships and contractor survey changes in vessel availability or condition. Weather can also affect scheduled	None

			<p>Surveys Division.</p>	<p>nautical mile variance. Targets are set annually based on resources available; monthly reports on performance to NOAA Deputy Under Secretary.</p>	<p>surveys, as well as unexpected events such as accidents and hurricanes that require redirection of resources.</p>	
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Section 4 Targets and Performance Summary

DOC Objective 18: Develop Sustainable Coastal Communities and Economies

Measure 18g: Percentage of U.S. counties rated as fully enabled or substantially enabled with accurate positioning capacity

Measure Description	<p>This measure tracks progress of NOAA's Geodesy program in facilitating the capacity of state and local governments and the private sector to utilize accurate positioning information, and NOAA will track county level use of its Online Position User Service (OPUS), submitted accepted bluebook data, county scorecard submissions, and identification of county representatives and State Advisors/Coordinators to determine how well state and local governments and the private sector are enabled with accurate positioning capacity. The level of capacity varies across the nation, and this variation is measured as deficient, substantially enabled, and fully enabled. Deficient capacity to conduct accurate positioning indicates that the county has not demonstrated it has the NOAA-enabled infrastructure, tools, and local capacity needed for accurate positioning, and substantially enabled capacity to conduct accurate positioning indicates the county has demonstrated it has the NOAA-enabled infrastructure, tools, and local capacity needed for accurate positioning, while fully enabled capacity indicates the county has validated NOAA-enabled infrastructure, tools, and local capacity needed for accurate positioning.</p>					
Target and Performance Table						
	FY2007 Actual	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Target	FY2012 Target
	51.6%	60.17%	72%	79%	83%	86%
Comments on Changes to Targets	<p>This outcome measure demonstrated three outstanding years of performance. Due to economic changes, NOAA's Online Position User Service (OPUS) use targets were lowered in FY 09, but OPUS use is now expanding more rapidly than expected due to improvements in economic conditions. Therefore, NOAA adjusted targets upward for FY 10 and FY 11 to both reflect this improved situation and to remain ambitious. This APP contains a pilot measure below that will replace this measure in FY2012 for reporting performance.</p>					
Relevant Program Changes	Program Changes	Title of Program Change				Exhibit 13 Page Number
-	NO	-				81
Validation & Verification Information	Data Source	Reporting Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
	NOAA's Online Position User Service (OPUS)	Quarterly	Automated database at the National Ocean Service.	NOAA will validate a county's capacity for local positioning through direct coordination with	OPUS customer data is limited and will be expanded through the Paperwork Reduction Act-	None

				<p>localities, such as OPUS project acceptance by NOAA. By assessing the user needs of county surveyors, counties, and their associations through successive limited distributions of a county scorecard, NOAA will validate that the geodesy program is meeting local positioning needs; quarterly reporting on performance to NOAA Deputy Under Secretary.</p>	<p>approved surveys of customers.</p>	
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Section 4 Targets and Performance Summary

DOC Objective 18: Develop Sustainable Coastal Communities and Economies

Measure 18 h (Pilot measure to replace Measure 18 g in the FY 13 Budget): Percent of U.S. and territories enabled to benefit from a new national vertical reference system for improved inundation management

Measure Description	<p>This measure tracks progress of NOAA’s National Geodetic Survey toward completing the Gravity for the Redefinition of the American Vertical Datum (GRAV-D) initiative and implementation of a new National Vertical Datum for a wide variety of applications including improved inundation management. This improved vertical reference system is critical for all observing systems and activities requiring accurate heights and is a key component of the enhanced geospatial framework required for success in achieving NOAA’s strategic priorities. It is of particular importance for community resilience by determining where water flows in order to make accurate inundation models and assessments as well as better management and planning decisions with improved water level predictions based on accurate elevations. “Enabled” is technically defined as having GRAV-D data necessary to support a 1 cm geoid supporting 2 cm orthometric heights (heights relative to sea-level) necessary to define a new national vertical datum. NGS will calculate the percentage of area enabled with regards to a pre-defined total area that includes U.S. territorial land and adjacent land and water areas necessary for final determination of a national vertical reference system. As progress is made, each survey area will be represented by a polygon that will define the completed areas. The performance measure will be tracked as a percent of the total area that is identified as complete.</p>					
Target and Performance Table						
	FY2007 Actual	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Target	FY2012 Target
Original Funds	N/A	N/A	N/A	7.83%	13%	20%
Impact of Recovery Funds	N/A	N/A	N/A	N/A	N/A	N/A
Adjusted Targets reflecting Original and Recovery Act Funds						
Comments on Changes to Targets	<p>This measure is new for the FY2012 APP. Targets are set to maximize collection of airborne gravity data using resources allocated to the Geodesy Base in the FY10 and following Presidents Budget. Using current resources, targets are set to complete airborne gravity collection for GRAV-D in 2022.</p>					
Impact of Recovery Act Funds	N/A					
Relevant Program Changes	Program Changes	Title of Program Change				Exhibit 13 Page Number
-	NO	-				N/A
Validation & Verification	Data Source	Reporting	Data Storage	Internal Control	Data Limitations	Actions to be

Information		Frequency		Procedures		Taken
	NOAA's Online Position User Service (OPUS)	Quarterly	Gravity database at the National Ocean Service	NOAA will validate potential local benefit from improved heights through use of its Online Positioning User Service (OPUS) height tool to evaluate the differences between current vertical reference system heights (NAVD88) and true orthometric (relative to sea level) heights produced through improved gravity data collected by GRAV-D.	Changes in availability or condition of aircraft or field crews for NOAA use. Weather can also affect scheduled surveys, as well as unexpected events such as accidents and hurricanes that require redirection of resources.	None

Section 4 Targets and Performance Summary

DOC Objective 18: Develop Sustainable Coastal Communities and Economies

Measure 18i: Pilot Measure--Percent of all coastal communities susceptible to harmful algal blooms verifying use of accurate HAB forecasts.

Measure Description	<p>This pilot measure was developed to track the forecast communities within a coastal region vulnerable to harmful algal blooms (HAB) and the utility and accuracy of HAB forecasts as verified through customer feedback responses before and after a forecast HAB event. The results are reviewed by NCCOS and CO-OPS and published as a NOAA report. NCCOS investment for HAB forecasts, roughly 30% of internal funding (\$36M) and 50% of competitive research (\$16M) is devoted to addressing harmful algal blooms. This includes characterizing causes of HABs and their impacts to humans and coastal ecosystems, developing products that detect and forecast HAB species and toxins and collaborating with coastal managers and the academic community to develop proactive strategies to enable decision makers to mitigate effects of HABs to coastal communities and economies. This measure tracks Coastal Goal water quality objective and what communities are susceptible to HABs, which one will use HAB forecasts and report their accuracy to NOAA. NCCOS, CO-OPS and others are developing operational forecasts throughout the coastal U.S. to meet their needs. Western Florida is operational, as is eastern Texas. Future focal points through FY 17 are the Great Lakes (Erie), Gulf of Maine, PAC Northwest, CA, and possibly the Chesapeake Bay. HABs are potentially devastating to coastal communities. HAB forecasts predict environmental conditions under different scenarios and will have capabilities specific to a geographic area and be counted for each ecosystem as they become operational. For example, harmful algal bloom forecasts in different regions are separate forecast capabilities that Federal, state, local, regional, territorial, or other entities need accurate, useful data from to make science-based, ecologically sound decisions to improve water quality in the long-term protection and management of coastal, marine, and Great Lakes resources.</p>
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Target and Performance Table						
	FY2007 Actual	FY2008 Actual	FY2009 Actual	FY2010 Actual	FY2011 Target	FY2012 Target
Original Funds	N/A	N/A	N/A	N/A	TBD	TBD
Impact of Recovery Funds	N/A	N/A	N/A	N/A	N/A	N/A
Adjusted Targets reflecting Original and Recovery Act Funds						
Comments on Changes to Targets						
Impact of Recovery Act Funds	N/A					
Relevant Program	Program	Title of Program Change				Exhibit 13 Page

Changes	Changes					Number	
-	NO					-	N/A
Validation & Verification Information	Data Source	Reporting Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken	
	Components that produce HAB forecasting capabilities [National Ocean Service's (NOS) National Centers for Coastal Ocean Science (NCCOS) and Center for Oceanographic Operational Products and Services (CO-OPS). Metadata from all contributing sources to the measure is managed in a secure NOS database for annual milestones and annual and long-term performance measures. Changes to reporting data require approval by the NOS administrator (managed by an	Annual	Metadata from all contributing sources to the measure is managed in a secure NOS server where files are stored but not archived for annual milestones and annual and long-term performance measures.	Changes to reporting data require approval by the NOS administrator (managed by an e-mail workflow approval system). Results are reported to NOAA Chief Financial Officers; quarterly reports on performance data are submitted to the NOAA Deputy Under Secretary.	Forecasting capabilities under development focus on NCCOS' intramural research efforts to respond to harmful algal blooms. NOAA will prioritize its efforts in developing new forecast capabilities and facilitating their transition to operational status based on user community priorities, including those for NOAA management, adequacy of data, significance of issue, and consequences of management action/inaction.	None.	

	e-mail workflow approval system). Results are reported to NOAA Chief Financial Officers; quarterly reports on performance data are submitted to the NOAA Deputy Under Secretary.					
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Section 5: FY 2012 Program Changes

Program Funding Changes Table

Program Line Office	Program Change	Accompanying GPRA	Base		Increase/Decrease		Exhibit 13 Page #
			GPRA Performance Measure Number	FTE	Amount	FTE	
NOS	IOOS Regional Observations: Marine Sensor Technology	18c	1	\$3,000	0	\$8,500	121
NOS	NCCOS: Oceans and Human Health	18c	2	\$4,000	2	(\$2,000)	158
NOS	Preparing Coastal Communities for Climate Hazards	18e	0	0	2	\$4,000	132
NOS	Coastal and Ocean Mapping: Implement the Ocean & Coastal Mapping Integration Act	18f	0	0	0	\$1,000	87
NOS	CELCP (PAC)	18d	1	\$20,000	0	\$5,000	199
NOS	Coastal Ecosystem Science	18a	0	\$900	0	\$1,000	155
NOS	NERRS (PAC)	18d	0	\$3,890	0	(\$2,200)	202
NMFS	Protected Resource Stock Assessments	17c	174	\$41,128	9	\$5,500	245
NMFS	Expand Annual Stock Assessments	17a, 17b	137	\$52,120	10	\$15,000	293
NMFS	Fisheries Habitat Restoration	17d, 17f	54	\$28,262	0	\$2,544	331
CS	Climate Portal	16f	0	\$0	2	\$1,500	614
CS	Carbon Observing and Analysis System	16b	40	\$12,905	7	\$8,000	587
NWS	Aviation Weather	15h	5	\$11,649	4	\$27,319	712
NWS	High Performance Computing	15c, 15d, 15f	0	\$29,169	0	\$11,000	751

**Section 6: Resource Requirements
Obligations, not BA**

(\$ in thousands)

13. Enhance scientific knowledge and provide information to stakeholders to improve innovation, technology, support economic growth and improve public safety	FY 2007 Actual	FY 2008 Actual	FY 2009 Actual	FY 2010 Actuals	FY 2011 Currently Available	FY 2012 Base	Increase/Decrease	FY 2012 Request
Operations, Research, Facilities (ORF) and Procurement, Acquisition, & Construction (PAC)								
National Ocean Service								
ORF	0	0	0	0	0	0	0	0
PAC	0	0	0	0	0	0	0	0
National Marine Fisheries Service								
ORF	0	0	0	0	0	0	0	0
PAC	0	0	0	0	0	0	0	0
Oceanic and Atmospheric Research								
ORF	306,677	199,980	203,955	227,508	224,964	205,332	(15,501)	189,831
PAC	24,940	-	1,199	0				0
NOAA Climate Service								0
ORF	0	0	0	0	0	0	0	0
PAC	0	0	0	0	0	0	0	0
National Weather Service								0
ORF	0	0	0	0	0	0	0	0
PAC	0	0	0	0	0	0	0	0
National Environmental Satellite Service								
ORF	0	0	0	0	0	0	0	0
PAC	0	0	0	0	0	0	0	0
Program Support								0
ORF	38,233	44,720	57,191	67,433	48,235	47,373	(17,498)	29,875
PAC	0	0	0	0	0	0	0	0
Direct	369,851	244,700	262,345	294,941	273,199	252,705	(32,999)	219,706
Other - Discretionary & Mandatory	0	0	0	0	0	0	0	0
Total Obligations	369,851	244,700	262,345	294,941	273,199	252,705	(32,999)	219,706

14. Improve understanding of the US economy, society and environment by providing timely, relevant, trusted and accurate data, standards and services enabling entities to make informed decisions	FY 2007 Actual	FY 2008 Actual	FY 2009 Actual	FY 2010 Actuals	FY 2011 Currently Available	FY 2012 Base	Increase/Decrease	FY 2012 Request
Operations, Research, Facilities (ORF) and Procurement, Acquisition, & Construction (PAC)								
National Ocean Service								
ORF								
PAC	0	0	0	0	0	0	0	0
National Marine Fisheries Service								
ORF	0	0	0	0	0	0	0	0
PAC	2	31	1	0	0	0	0	0
Oceanic and Atmospheric Research								
ORF	0	0	0	0	0	0	0	0
PAC	0	0	0	0	0	0	0	0
NOAA Climate Service								
ORF	0	0	0	0	0	0	0	0
PAC	0	0	0	0	0	0	0	0
National Weather Service								
ORF	0							
PAC	0	0	0	0	0	0	0	0
National Environmental Satellite Service								
ORF	101,039	103,197	108,696	110,830	113,429	112,827	5,063	117,890
PAC	798,331	768,490	980,549	1,219,754	1,180,608	1,176,235	721,301	1,897,536
Program Support								0
ORF	177,488	201,088	239,750	232,070	202,778	242,131	6,044	248,175
PAC	40,757	16,838	34,810	81,733	3,179	2,000	12,026	14,026
Direct	1,117,618	1,089,645	1,363,806	1,644,387	1,499,994	1,533,193	744,434	2,277,627
Other - Discretionary & Mandatory	1,820	1,802	1,674	1,822	1,822	1,936	0	1,936
Total Obligations	1,119,438	1,091,447	1,365,480	1,646,209	1,501,816	1,535,129	744,434	2,279,563

15. Enhance weather, water, and climate reporting and forecasting	FY 2007 Actual	FY 2008 Actual	FY 2009 Actual	FY 2010 Actuals	FY 2011 Currently Available	FY 2012 Base	Increase/Decrease	FY 2012 Request
Operations, Research, Facilities (ORF) and Procurement, Acquisition, & Construction (PAC)								
National Ocean Service								
ORF	0	0	0	0	0	0	0	0
PAC	0	0	0	0	0	0	0	0
National Marine Fisheries Service								
ORF	0	0	0	0	0	0	0	0
PAC	0	0	0	0	0	0	0	0
Oceanic and Atmospheric Research								
ORF	0	0	0	0	0	0	0	0
PAC	0	0	0	0	0	0	0	0
NOAA Climate Service								
ORF	0	0	0	0	0	0	0	0
PAC	0	0	0	0	0	0	0	0
National Weather Service								
ORF	773,958	808,402	858,133	891,593	882,897	901,156	(4,368)	896,788
PAC	113,520	102,059	101,717	108,004	127,979	100,489	(9,299)	91,190
National Environmental Satellite Service								
ORF	0	0	0	0	0	0	0	0
PAC	0	0	0	0	0	0	0	0
Program Support								
ORF	84,466	81,848	90,630	93,609	115,288	104,529	3,048	107,577
PAC	2,988	0	0	0	0	0	0	0
Direct	974,932	992,309	1,050,480	1,093,206	1,126,164	1,106,174	(10,619)	1,095,555
Other - Discretionary & Mandatory	0	0	0	0	0	0	0	0
Total Obligations	974,932	992,309	1,050,480	1,093,206	1,126,164	1,106,174	(10,619)	1,095,555

16. Support climate adaptation and migration	FY 2007 Actual	FY 2008 Actual	FY 2009 Actual	FY 2010 Actuals	FY 2011 Currently Available	FY 2012 Base	Increase/Decrease	FY 2012 Request
Operations, Research, Facilities (ORF) and Procurement, Acquisition, & Construction (PAC)								
National Ocean Service								
ORF	0	0	0	0	0	0	0	0
PAC	0	0	0	0	0	0	0	0
National Marine Fisheries Service								
ORF	0	0	0	0	0	0	0	0
PAC	0	0	0	0	0	0	0	0
Oceanic and Atmospheric Research								
ORF	55,494	188,394	192,704	212,736	210,057	22,182	0	22,182
PAC	10,368	10,121	90,832	99,576	10,539	-	0	0
NOAA Climate Service								
ORF	0	0	0	0	0	316,899	4,928	321,827
PAC	0	0	0	0	0	36,425	(12,034)	24,391
National Weather Service								
ORF							0	0
PAC	-	4,050	3,776	3,707	3,791	0	0	0
National Environmental Satellite Service								
ORF	75,507	75,935	78,669	88,595	84,271	0	0	0
PAC	7,562	8,218	17,450	19,444	19,472	0	0	0
Program Support								
ORF	11,313	10,966	12,141	12,537	15,445	14,003	406	14,409
PAC	0	0	0	0	0	0	0	0
Direct	160,244	297,683	395,571	436,595	343,575	389,509	(6,700)	382,809
Other - Discretionary & Mandatory	0	0	0	0	0	0	0	0
Total Obligations	160,244	297,683	395,571	436,595	343,575	389,509	(6,700)	382,809

17. Develop sustainable and resilient fisheries, habitats, and species	FY 2007 Actual	FY 2008 Actual	FY 2009 Actual	FY 2010 Actuals	FY 2011 Currently Available	FY 2012 Base	Increase/Decrease	FY 2012 Request
Operations, Research, Facilities (ORF) and Procurement, Acquisition, & Construction (PAC)								
National Ocean Service								
ORF	0	0	0	0	0	0	0	0
PAC	12,480	10,549	18	0	0	0	0	0
National Marine Fisheries Service								
ORF	827,409	815,649	1,055,273	942,883	923,997	922,974	(12,562)	910,412
PAC	1,480	2,019	4,664	0	0	0	0	0
Oceanic and Atmospheric Research								
ORF	0	0	0	0	0	0	0	0
PAC	0	0	0	0	0	0	0	0
NOAA Climate Service								
ORF	0	0	0	0	0	0	0	0
PAC	0	0	0	0	0	0	0	0
National Weather Service								
ORF	0	0	0	0	0	0	0	0
PAC	0	0	0	0	0	0	0	0
National Environmental Satellite Service								
ORF	0	0	0	0	0	0	0	0
PAC	0	0	0	0	0	0	0	0
Program Support								
ORF	60,983	54,993	62,812	67,689	78,155	71,960	5,058	77,018
PAC	0	0	0	0	0	0	0	0
Direct	902,352	883,209	1,122,766	1,010,572	1,002,152	994,934	(7,504)	987,430
Other - Discretionary & Mandatory	83,658	90,428	122,681	115,196	122,420	97,342	(14,650)	82,692
Total Obligations	986,009	973,637	1,245,447	1,125,768	1,124,572	1,092,276	(22,154)	1,070,122

18. Support coastal communities that are environmentally and economically sustainable	FY 2007 Actual	FY 2008 Actual	FY 2009 Actual	FY 2010 Actuals	FY 2011 Currently Available	FY 2012 Base	Increase/Decrease	FY 2012 Request
Operations, Research, Facilities (ORF) and Procurement, Acquisition, & Construction (PAC)								
National Ocean Service								
ORF	473,313	493,316	538,100	519,553	519,578	529,605	(18,386)	511,219
PAC	48,683	43,916	54,042	42,567	44,581	40,890	(9,156)	31,734
National Marine Fisheries Service								
ORF	0	0	0	0	0	0	0	0
PAC	31,089	3,156	2,233	2,082	1,524	0	0	0
Oceanic and Atmospheric Research								
ORF	0	0	0	0	0	0	0	0
PAC	0	0	0	0	0	0	0	0
NOAA Climate Service								
ORF	0	0	0	0	0	0	0	0
PAC	0	0	0	0	0	0	0	0
National Weather Service								
ORF	0	0	0	0	0	0	0	0
PAC	0	0	0	0	0	0	0	0
National Environmental Satellite Service								
ORF	0	0	0	0	0	0	0	0
PAC	0	0	0	0	0	0	0	0
Program Support								
ORF	24,338	22,801	25,614	26,993	32,249	29,449	1,424	30,873
PAC	15,588	23,877	206,592	86,788	982	-	900	900
Direct	593,011	587,066	826,580	677,983	598,914	599,944	(25,218)	574,726
Other - Discretionary & Mandatory	21,766	22,000	11,800	8,910	55,326	15,600	0	15,600
Total Obligations	614,777	609,066	838,380	686,893	654,240	615,544	(25,218)	590,326

SUMMARY	FY 2007 Actual	FY 2008 Actual	FY 2009 Actual	FY 2010 Actuals	FY 2011 Currently Available	FY 2012 Base	Increase/ Decrease	FY 2012 Request
<i>Original Funding</i>								
Direct	4,118,007	4,094,611	5,021,548	5,157,684	4,843,999	4,876,459	661,394	5,537,853
Other - Discretionary & Mandatory	107,244	114,230	136,154	125,928	179,568	123,878	(14,650)	109,228
Reimbursable	242,444	219,872	231,620	384,284	242,000	242,000	(3,000)	239,000
IT Funding	590,413	603,800	947,677	1,035,197	1,226,801	1,226,801	3,095	1,229,896
TOTAL NOAA Obligations	4,467,695	4,428,714	5,389,322	5,667,896	5,265,567	5,242,337	643,744	5,886,081
Direct	4,225,251	4,208,842	5,157,702	5,283,612	5,023,567	5,000,337	646,744	5,647,081
Reimbursable	242,444	219,872	231,620	384,284	242,000	242,000	(3,000)	239,000
IT Funding	590,413	603,800	947,677	1,035,197	1,226,801	1,226,801	3,095	1,229,896
<i>Original FTE</i>	12,639	12,699	12,840	13,083	13,047	13,088	97	13,185
Total FTE	12,639	12,699	12,840	13,083	13,047	13,088	97	13,185

Department of Commerce
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PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
 (Dollar Amounts in Thousands)

Comparison by activity/subactivity		FY 2010		FY 2011		FY 2012		FY 2012		Increase/ Decrease	
		Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount		
NOS											
Navigation Services											
Mapping & Charting	Pos/BA	288	97,141	288	95,615	288	98,591	288	98,841	0	250
	FTE/OBL	291	96,682	272	96,204	272	98,591	272	98,841	0	250
Geodesy	Pos/BA	163	37,220	163	34,094	163	35,042	163	29,542	0	(5,500)
	FTE/OBL	148	36,998	154	34,323	154	35,042	154	29,542	0	(5,500)
Tide & Current Data	Pos/BA	129	33,644	129	32,729	129	33,779	129	28,979	0	(4,800)
	FTE/OBL	123	33,248	124	33,259	124	33,779	124	28,979	0	(4,800)
Total: Navigation Services	Pos/BA	580	168,005	580	162,438	580	167,412	580	157,362	0	(10,050)
	FTE/OBL	562	166,928	550	163,786	550	167,412	550	157,362	0	(10,050)
Ocean Resources Conservation and Assessment											
Ocean Assessment Program (OAP)	Pos/BA	116	112,883	116	105,622	114	103,883	128	104,759	14	876
	FTE/OBL	141	112,028	113	106,607	111	103,883	122	104,759	11	876
Response and Restoration	Pos/BA	124	28,106	124	26,848	124	27,670	124	27,758	0	88
	FTE/OBL	88	28,080	118	26,904	118	27,670	118	27,758	0	88
National Centers for Coastal Ocean Science	Pos/BA	210	54,745	210	53,924	212	59,522	212	56,011	0	(3,511)
	FTE/OBL	197	54,668	197	54,054	199	59,522	199	56,011	0	(3,511)

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PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
 (Dollar Amounts in Thousands)

Comparison by activity/subactivity		FY 2010		FY 2011		FY 2012		FY 2012		Increase/ Decrease	
		Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount		
Total: Ocean Resources	Pos/BA	450	195,734	450	186,394	450	191,075	464	188,528	14	(2,547)
Conservation and Assessment	FTE/OBL	426	194,776	428	187,565	428	191,075	439	188,528	11	(2,547)
Ocean and Coastal Management											
Coastal Management	Pos/BA	73	104,940	73	103,936	73	105,411	74	128,165	1	22,754
	FTE/OBL	59	104,868	69	104,117	70	105,411	71	128,165	1	22,754
Ocean Management (Marine Sanctuary Program)	Pos/BA	190	53,017	190	48,482	190	50,087	190	46,036	0	(4,051)
	FTE/OBL	187	52,981	182	48,655	182	50,087	182	46,036	0	(4,051)
Total: Ocean & Coastal Management	Pos/BA	263	157,957	263	152,418	263	155,498	264	174,201	1	18,703
	FTE/OBL	246	157,849	251	152,772	252	155,498	253	174,201	1	18,703
Undistributed Costs											
Congressionally Directed Projects	Pos/BA	0	0	0	15,455	0	15,620	0	0	0	(15,620)
	FTE/OBL	0	0	0	15,455	0	15,620	0	0	0	(15,620)
Administrative Efficiency Initiative	Pos/BA	0	0	0	0	0	0	0	(8,872)	0	(8,872)
	FTE/OBL	0	0	0	0	0	0	0	(8,872)	0	(8,872)
Total: Undistributed Costs	Pos/BA	0	0	0	15,455	0	15,620	0	(8,872)	0	(24,492)
	FTE/OBL	0	0	0	15,455	0	15,620	0	(8,872)	0	(24,492)
TOTAL NOS - ORF	Pos/BA	1,293	521,696	1,293	516,705	1,293	529,605	1,308	511,219	15	(18,386)
	FTE/OBL	1,234	519,553	1,229	519,578	1,230	529,605	1,242	511,219	12	(18,386)

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PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
 (Dollar Amounts in Thousands)

Comparison by activity/subactivity		FY 2010		FY 2011		FY 2012		FY 2012		Increase/ Decrease	
		Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount		
TOTAL NOS - PAC	Pos/BA	1	40,849	1	40,890	1	40,890	1	31,734	0	(9,156)
	FTE/OBL	16	42,567	1	44,581	1	40,890	1	31,734	0	(9,156)
Damage Assessment and Restoration Revolving Fund	Pos/BA	16	3,222	16	3,300	16	3,000	16	3,000	0	0
	FTE/OBL	7	8,755	16	55,326	16	15,600	16	15,600	0	0
Coastal Zone Management Fund	Pos/BA	0	(284)	0	(1,500)	0	(1,500)	0	(1,500)	0	0
	FTE/OBL	0	0	0	0	0	0	0	0	0	0
Coastal Impact Assistance Fund	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	1	155	0	0	0	0	0	0	0	0
Sanctuaries Asset Forfeiture Fund	Pos/BA	0	0	0	0	0	1,000	0	1,000	0	0
	FTE/OBL	0	0	0	0	0	1,000	0	1,000	0	0
TOTAL NOS	Pos/BA	1,310	565,483	1,310	559,395	1,310	572,995	1,325	545,453	15	(27,542)
	FTE/OBL	1,258	571,030	1,246	619,485	1,247	587,095	1,259	559,553	12	(27,542)
NMFS											
Protected Species Research and Management											
Protected Species	Pos/BA	850	203,748	850	199,447	850	206,563	866	216,581	16	10,018
	FTE/OBL	779	203,190	779	202,767	817	206,563	829	216,581	12	10,018

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PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
 (Dollar Amounts in Thousands)

Comparison by activity/subactivity		FY 2010		FY 2011		FY 2012		FY 2012		Increase/ Decrease	
		Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Total: Protected Species Research & Management	Pos/BA	850	203,748	850	199,447	850	206,563	866	216,581	16	10,018
	FTE/OBL	779	203,190	799	202,767	817	206,563	829	216,581	12	10,018
Fisheries Research and Management	Pos/BA	1,442	476,544	1,442	420,228	1,442	440,274	1,478	476,024	36	35,750
	FTE/OBL	1,318	462,575	1,353	439,009	1,366	440,274	1,394	476,024	28	35,750
Total: Fisheries Research and Management	Pos/BA	1,442	476,544	1,442	420,228	1,442	440,274	1,478	476,024	36	35,750
	FTE/OBL	1,318	462,575	1,353	439,009	1,366	440,274	1,394	476,024	28	35,750
Enforcement and Observers/Training											
Enforcement	Pos/BA	259	65,607	259	64,979	259	67,626	259	67,026	0	(600)
	FTE/OBL	230	65,231	243	65,807	248	67,626	248	67,026	0	(600)
Observers & Training	Pos/BA	141	41,033	141	40,640	141	42,196	141	39,181	0	(3,015)
	FTE/OBL	113	40,498	132	41,471	137	42,196	137	39,181	0	(3,015)
Total: Enforcement and Observers/Training	Pos/BA	400	106,640	400	105,619	400	109,822	400	106,207	0	(3,615)
	FTE/OBL	343	105,729	375	107,278	385	109,822	385	106,207	0	(3,615)
Habitat Conservation & Restoration											
Habitat Conservation	Pos/BA	158	58,135	158	49,812	158	51,056	158	53,600	0	2,544
	FTE/OBL	150	70,562	149	51,178	149	51,056	149	53,600	0	2,544

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PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS
 (Dollar Amounts in Thousands)

Comparison by activity/subactivity		FY 2010		FY 2011		FY 2012		FY 2012		Increase/ Decrease	
		Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	158	Amount		
Total: Habitat Conservation & Restoration	Pos/BA	158	58,135	158	49,812	158	51,056	158	53,600	0	2,544
	FTE/OBL	150	70,562	149	51,178	149	51,056	149	53,600	0	2,544
Other Activities Supporting Fisheries											
Other Activities Supporting Fisheries	Pos/BA	152	102,628	152	86,456	152	81,484	145	74,271	(7)	(7,213)
	FTE/OBL	240	100,827	142	90,347	143	81,484	135	74,271	(8)	(7,213)
Total: Other Activities Supporting Fisheries	Pos/BA	152	102,628	152	86,456	152	81,484	145	74,271	(7)	(7,213)
	FTE/OBL	240	100,827	142	90,347	143	81,484	135	74,271	(8)	(7,213)
Undistributed Costs											
Congressionally Directed Projects	Pos/BA	0	0	0	33,418	0	33,775	0	0	0	(33,775)
	FTE/OBL	0	0	0	33,418	0	33,775	0	0	0	(33,775)
Administrative Efficiency Initiative	Pos/BA	0	0	0	0	0	0	0	(16,271)	0	(16,271)
	FTE/OBL	0	0	0	0	0	0	0	(16,271)	0	(16,271)
Total: Undistributed Costs	Pos/BA	0	0	0	33,418	0	33,775	0	(16,271)	0	(50,046)
	FTE/OBL	0	0	0	33,418	0	33,775	0	(16,271)	0	(50,046)
Total NMFS - ORF	Pos/BA	3,002	947,695	3,002	894,980	3,002	922,974	3,047	910,412	45	(12,562)
	FTE/OBL	2,830	942,883	2,818	923,997	2,860	922,974	2,892	910,412	32	(12,562)
TOTAL NMFS - PAC	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	2,082	0	1,524	0	0	0	0	0	0

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		Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	158	Amount		
Pacific Coastal Salmon	Pos/BA	0	79,920	0	80,000	0	80,000	0	65,000	0	(15,000)
Recovery Fund	FTE/OBL	1	79,934	0	80,000	0	80,000	0	65,000	0	(15,000)
Fishermen's Contingency	Pos/BA	1	0	1	0	1	0	1	350	0	350
Fund	FTE/OBL	0	0	1	10	1	0	1	350	0	350
Foreign Fishing Observer	Pos/BA	0	0	0	0	0	0	0	(350)	0	(350)
Fund	FTE/OBL	0	0	0	0	0	0	0	0	0	0
Fisheries Finance Program	Pos/BA	0	5,744	0	9,910	0	0	0	0	0	0
Account	FTE/OBL	0	5,744	0	9,910	0	0	0	0	0	0
Promote and Develop	Pos/BA	0	8,771	4	0	4	5,000	4	5,000	0	0
Fishery Products	FTE/OBL	2	11,702	4	0	4	5,000	4	5,000	0	0
Federal Ship Financing	Pos/BA	0	(212)	0	0	0	0	0	0	0	0
Fund	FTE/OBL	0	1	0	0	0	0	0	0	0	0
Environmental Improvement	Pos/BA	0	9,870	0	378	0	1,467	0	1,467	0	0
and Restoration Fund	FTE/OBL	0	9,641	0	10,248	0	1,467	0	1,467	0	0
Limited Access System	Pos/BA	0	3,882	0	8,576	0	9,675	0	9,675	0	0
Administration Fund	FTE/OBL	35	7,291	0	20,046	0	9,675	0	9,675	0	0

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		Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount		
Marine Mammal Unusual Mortality Event Fund	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	0	0	206	0	200	0	200	0	0
Western Pacific Sustainable Fisheries Fund	Pos/BA	0	1,000	0	1,000	0	1,000	0	1,000	0	0
	FTE/OBL	0	883	0	2,000	0	1,000	0	1,000	0	0
Asset Forfeiture Fund	Pos/BA	0	0	0	0	0	8,000	0	8,000	0	0
	FTE/OBL	0	0	0	0	0	8,000	0	8,000	0	0
TOTAL NMFS	Pos/BA	3,002	1,056,670	3,007	994,844	3,007	1,028,116	3,052	1,000,554	45	(27,562)
	FTE/OBL	2,868	1,060,161	2,823	1,047,941	2,865	1,028,316	2,897	1,001,104	32	(27,212)
OAR											
Climate Research											
Laboratories & Cooperative Institutes	Pos/BA	261	54,793	261	54,269	114	22,182	114	22,182	0	0
	FTE/OBL	211	55,095	249	54,538	110	22,182	110	22,182	0	0
Climate Data & Information	Pos/BA	3	12,068	3	11,952	0	0	0	0	0	0
	FTE/OBL	32	12,042	3	11,992	0	0	0	0	0	0
Competitive Research Program	Pos/BA	114	153,046	114	151,581	0	0	0	0	0	0
	FTE/OBL	123	153,693	107	151,709	0	0	0	0	0	0

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		Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount		
Climate Operations	Pos/BA	0	912	0	903	0	0	0	0	0	0
	FTE/OBL	0	912	0	903	0	0	0	0	0	0
Climate Observations & Services	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	0	0	0	0	0	0	0	0	0
Other Partnership Programs	Pos/BA	0	4,091	0	0	0	0	0	0	0	0
	FTE/OBL	0	4,094	0	0	0	0	0	0	0	0
Total: Climate Research	Pos/BA	378	224,910	378	218,705	114	22,182	114	22,182	0	0
	FTE/OBL	366	225,836	359	218,962	110	22,182	110	22,182	0	0
Weather & Air Quality Research											
Laboratories & Cooperative Institutes	Pos/BA	198	55,020	198	54,493	163	41,037	163	39,412	0	(1,625)
	FTE/OBL	204	55,162	188	54,622	162	41,037	162	39,412	0	(1,625)
Weather & Air Quality Research Programs	Pos/BA	22	9,462	22	9,372	22	9,610	22	14,310	0	4,700
	FTE/OBL	5	9,579	21	9,372	21	9,610	21	14,310	0	4,700
Other Partnership Programs	Pos/BA	0	5,445	0	0	0	0	0	0	0	0
	FTE/OBL	0	5,158	0	312	0	0	0	0	0	0

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		Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount		
Total: Weather & Air Quality	Pos/BA	220	69,927	220	63,865	185	50,647	185	53,722	0	3,075
Research	FTE/OBL	209	69,899	209	64,306	183	50,647	183	53,722	0	3,075
Ocean, Coastal, and Great Lakes											
Research											
Laboratories & Cooperative	Pos/BA	126	21,818	126	21,609	126	22,409	126	22,409	0	0
Institutes	FTE/OBL	90	21,899	119	21,677	119	22,409	119	22,409	0	0
National Sea Grant College	Pos/BA	28	62,937	28	62,334	28	63,140	28	62,546	0	(594)
Program	FTE/OBL	13	63,208	27	62,350	27	63,140	27	62,546	0	(594)
National Undersea Research	Pos/BA	0	0	0	0	0	0	0	0	0	0
Program	FTE/OBL	0	0	0	0	0	0	0	0	0	0
Ocean Exploration and	Pos/BA	18	30,685	18	30,391	18	30,923	18	29,523	0	(1,400)
Research	FTE/OBL	21	31,314	17	30,404	17	30,923	17	29,523	0	(1,400)
Other Ecosystems Programs	Pos/BA	0	0	0	0	0	5,500	4	11,600	4	6,100
	FTE/OBL	0	0	0	0	0	5,500	3	11,600	3	6,100
Other Partnership Programs	Pos/BA	0	15,035	0	0	0	0	0	0	0	0
	FTE/OBL	0	15,041	0	26	0	0	0	0	0	0
Total: Ocean, Coastal, and	Pos/BA	172	130,475	172	114,334	172	121,972	176	126,078	4	4,106
Great Lakes Research	FTE/OBL	124	131,462	163	114,457	163	121,972	166	126,078	3	4,106

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		Actuals		Currently Available		Base Program		Estimate			
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Information Technology R&D											
High Performance Computing	Pos/BA	14	13,015	14	12,890	14	13,213	14	13,266	0	53
& Communications (HPCC)	FTE/OBL	14	13,047	13	12,961	13	13,213	13	13,266	0	53
Total: Information Technology	Pos/BA	14	13,015	14	12,890	14	13,213	14	13,266	0	53
R&D	FTE/OBL	14	13,047	13	12,961	13	13,213	13	13,266	0	53
Undistributed Costs											
Congressionally Directed Projects	Pos/BA	0	0	0	24,335	0	19,500	0	0	0	(19,500)
	FTE/OBL	0	0	0	24,335	0	19,500	0	0	0	(19,500)
Administrative Efficiency Initiative	Pos/BA	0	0	0	0	0	0	0	(3,235)	0	(3,235)
	FTE/OBL	0	0	0	0	0	0	0	(3,235)	0	(3,235)
Total: Undistributed Costs	Pos/BA	0	0	0	24,335	0	19,500	0	(3,235)	0	(22,735)
	FTE/OBL	0	0	0	24,335	0	19,500	0	(3,235)	0	(22,735)
TOTAL OAR - ORF	Pos/BA	784	438,327	784	434,129	485	227,514	489	212,013	4	(15,501)
	FTE/OBL	713	440,244	744	435,021	469	227,514	472	212,013	3	(15,501)
TOTAL OAR - PAC	Pos/BA	0	10,369	0	10,379	0	0	0	0	0	0
	FTE/OBL	5	99,576	0	10,539	0	0	0	0	0	0
TOTAL OAR	Pos/BA	784	448,696	784	444,508	485	227,514	489	212,013	4	(15,501)
	FTE/OBL	718	539,820	744	445,560	469	227,514	472	212,013	3	(15,501)

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		Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
CS											
Climate Research											
Modeling	Pos/BA	0	0	0	0	72	24,245	85	31,225	13	6,980
	FTE/OBL	0	0	0	0	74	24,245	84	31,225	10	6,980
Physical Sciences	Pos/BA	0	0	0	0	55	10,938	55	18,610	0	7,672
	FTE/OBL	0	0	0	0	52	10,938	52	18,610	0	7,672
Chemical Sciences	Pos/BA	0	0	0	0	42	18,049	42	15,849	0	(2,200)
	FTE/OBL	0	0	0	0	40	18,049	40	15,849	0	(2,200)
Global Monitoring & Research	Pos/BA	0	0	0	0	41	14,184	50	26,884	9	12,700
	FTE/OBL	0	0	0	0	41	14,184	48	26,884	7	12,700
Competitive Research Programs	Pos/BA	0	0	0	0	47	70,081	47	64,021	0	(6,060)
	FTE/OBL	0	0	0	0	45	70,081	45	64,021	0	(6,060)
Total: Climate Research	Pos/BA	0	0	0	0	257	137,497	279	156,589	22	19,092
	FTE/OBL	0	0	0	0	252	137,497	269	156,589	17	19,092
Integrated Climate Services											
NIDIS	Pos/BA	0	0	0	0	2	13,591	2	13,591	0	0
	FTE/OBL	0	0	0	0	1	13,591	1	13,591	0	0

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		Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount		
Regional Services	Pos/BA	0	0	0	0	6	4,888	6	4,427	0	(461)
	FTE/OBL	0	0	0	0	6	4,888	6	4,427	0	(461)
Assessment Services	Pos/BA	0	0	0	0	0	9,000	4	10,000	4	1,000
	FTE/OBL	0	0	0	0	0	9,000	3	10,000	3	1,000
Communication & Education	Pos/BA	0	0	0	0	0	1,538	3	3,038	3	1,500
	FTE/OBL	0	0	0	0	0	1,538	2	3,038	2	1,500
Total: Integrated Climate Services	Pos/BA	0	0	0	0	8	29,017	15	31,056	7	2,039
	FTE/OBL	0	0	0	0	7	29,017	12	31,056	5	2,039
Observations and Monitoring											
Ocean Observations	Pos/BA	0	0	0	0	21	45,187	22	49,571	1	4,384
	FTE/OBL	0	0	0	0	19	45,187	20	49,571	1	4,384
Climate Data and Information Services	Pos/BA	0	0	0	0	166	53,809	172	46,693	6	(7,116)
	FTE/OBL	0	0	0	0	152	53,809	156	46,693	4	(7,116)
Ocean Data and Information Services	Pos/BA	0	0	0	0	63	13,984	63	14,022	0	38
	FTE/OBL	0	0	0	0	55	13,984	55	14,022	0	38
Geophysical Data and Information Services	Pos/BA	0	0	0	0	53	6,050	53	6,050	0	0
	FTE/OBL	0	0	0	0	48	6,050	48	6,050	0	0

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		Actuals		Currently Available		Base Program		Estimate			
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Environmental Services	Pos/BA	0	0	0	0	0	10,083	0	10,083	0	0
	FTE/OBL	0	0	0	0	0	10,083	0	10,083	0	0
Atmospheric Observations	Pos/BA	0	0	0	0	3	5,284	3	5,284	0	0
	FTE/OBL	0	0	0	0	3	5,284	3	5,284	0	0
Observations, Monitoring and Prediction for CPC	Pos/BA	0	0	0	0	50	7,043	50	7,043	0	0
	FTE/OBL	0	0	0	0	47	7,043	47	7,043	0	0
Total: Observations and Monitoring	Pos/BA	0	0	0	0	356	141,440	363	138,746	7	(2,694)
	FTE/OBL	0	0	0	0	324	141,440	329	138,746	5	(2,694)
Undistributed Costs											
Congressionally Directed Projects	Pos/BA	0	0	0	0	0	8,945	0	0	0	(8,945)
	FTE/OBL	0	0	0	0	0	8,945	0	0	0	(8,945)
Administrative Efficiency Initiative	Pos/BA	0	0	0	0	0	0	0	(4,564)	0	(4,564)
	FTE/OBL	0	0	0	0	0	0	0	(4,564)	0	(4,564)
Total: Undistributed Costs	Pos/BA	0	0	0	0	0	8,945	0	(4,564)	0	(13,509)
	FTE/OBL	0	0	0	0	0	8,945	0	(4,564)	0	(13,509)

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		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
TOTAL CS - ORF	Pos/BA	0	0	0	0	623	316,899	657	321,827	34	4,928
	FTE/OBL	0	0	0	0	583	316,899	610	321,827	27	4,928
TOTAL CS - PAC	Pos/BA	0	0	0	0	0	36,425	0	24,391	0	(12,034)
	FTE/OBL	0	0	0	0	0	36,425	0	24,391	0	(12,034)
TOTAL CS	Pos/BA	0	0	0	0	623	353,324	657	346,218	34	(7,106)
	FTE/OBL	0	0	0	0	583	353,324	610	346,218	27	(7,106)
National Weather Service											
Operations and Research											
Local Warnings and Forecasts	Pos/BA	4,325	709,904	4,325	696,946	4,327	718,011	4,332	732,594	5	14,583
	FTE/OBL	4,178	710,296	4,118	697,088	4,121	718,011	4,125	732,594	4	14,583
Central Forecast Guidance	Pos/BA	323	79,445	323	78,685	273	73,841	273	73,841	0	0
	FTE/OBL	301	79,447	307	78,694	260	73,841	260	73,841	0	0
Total: Operations and Research	Pos/BA	4,648	789,349	4,648	775,631	4,600	791,852	4,605	806,435	5	14,583
	FTE/OBL	4,479	789,743	4,425	775,782	4,381	791,852	4,385	806,435	4	14,583
Systems Operation & Maintenance (O&M)											
Systems Operation & Maintenance	Pos/BA	197	101,877	197	100,902	197	103,079	197	103,408	0	329
	FTE/OBL	213	101,850	188	100,956	188	103,079	188	103,408	0	329

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		Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Total: Systems Operation & Maintenance (O&M)	Pos/BA	197	101,877	197	100,902	197	103,079	197	103,408	0	329
	FTE/OBL	213	101,850	188	100,956	188	103,079	188	103,408	0	329
Undistributed Costs											
Congressionally Directed Projects	Pos/BA	0	0	0	6,159	0	6,225	0	0	0	(6,225)
	FTE/OBL	0	0	0	6,159	0	6,225	0	0	0	(6,225)
Adiministrative Effeciency Initiative	Pos/BA	0	0	0	0	0	0	0	(13,055)	0	(13,055)
	FTE/OBL	0	0	0	0	0	0	0	(13,055)	0	(13,055)
Total: Undistributed Costs	Pos/BA	0	0	0	6,159	0	6,225	0	(13,055)	0	(19,280)
	FTE/OBL	0	0	0	6,159	0	6,225	0	(13,055)	0	(19,280)
TOTAL NWS - ORF	Pos/BA	4,845	891,226	4,845	882,692	4,797	901,156	4,802	896,788	5	(4,368)
	FTE/OBL	4,692	891,593	4,613	882,897	4,569	901,156	4,573	896,788	4	(4,368)
TOTAL NWS - PAC	Pos/BA	32	107,619	32	107,727	30	100,489	30	91,190	0	(9,299)
	FTE/OBL	33	111,711	31	131,770	29	100,489	29	91,190	0	(9,299)
TOTAL NWS	Pos/BA	4,877	998,845	4,877	990,419	4,827	1,001,645	4,832	987,978	5	(13,667)

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		Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
NESS											
Environmental Satellite Observing System											
Satellite Command and Control	Pos/BA	183	47,324	183	46,871	183	48,594	183	48,594	0	0
	FTE/OBL	172	47,500	174	46,904	174	48,594	174	48,594	0	0
Product Processing & Distribution	Pos/BA	129	32,665	129	32,353	129	33,307	129	40,226	0	6,919
	FTE/OBL	94	32,996	123	32,372	123	33,307	123	40,226	0	6,919
Product Development, Readiness & Application	Pos/BA	107	27,943	107	27,675	107	28,435	107	28,435	0	0
	FTE/OBL	93	27,773	102	27,916	102	28,435	102	28,435	0	0
Office of Space Commercialization	Pos/BA	5	648	5	642	5	661	5	661	0	0
	FTE/OBL	3	652	5	643	5	661	5	661	0	0
Group on Earth Observations (GEO)	Pos/BA	0	499	0	495	0	506	0	506	0	0
	FTE/OBL	0	499	0	495	0	506	0	506	0	0
Commercial Remote Sensing Licensing & Enforcement	Pos/BA	5	1,300	5	1,287	5	1,324	5	1,324	0	0
	FTE/OBL	5	1,410	5	1,290	5	1,324	5	1,324	0	0
Total: Environmental Satellite Observing Systems	Pos/BA	429	110,379	429	109,323	429	112,827	429	119,746	0	6,919
	FTE/OBL	367	110,830	409	109,620	409	112,827	409	119,746	0	6,919

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Comparison by activity/subactivity		FY 2010		FY 2011		FY 2012		FY 2012		Increase/ Decrease	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
NOAA's Data Centers & Information Services											
Archive, Access & Assessment	Pos/BA	243	67,188	243	66,544	0	0	0	0	0	0
	FTE/OBL	197	67,163	230	66,851	0	0	0	0	0	0
Coastal Data Development	Pos/BA	16	4,555	16	4,511	0	0	0	0	0	0
	FTE/OBL	14	4,548	16	4,517	0	0	0	0	0	0
Regional Climate Centers	Pos/BA	0	3,496	0	3,463	0	0	0	0	0	0
	FTE/OBL	0	4,346	0	3,463	0	0	0	0	0	0
Environmental Data Systems Modernization	Pos/BA	24	9,502	24	9,411	0	0	0	0	0	0
	FTE/OBL	41	9,549	23	9,432	0	0	0	0	0	0
Other Data and Information Services	Pos/BA	0	3,846	0	0	0	0	0	0	0	0
	FTE/OBL	4	2,989	0	8	0	0	0	0	0	0
Total: NOAA's Data Centers & Information Services	Pos/BA	283	88,587	283	83,929	0	0	0	0	0	0
	FTE/OBL	256	88,595	269	84,271	0	0	0	0	0	0
Undistributed Costs											
Congressionally Directed Projects	Pos/BA	0	0	0	3,809	0	0	0	0	0	0
	FTE/OBL	0	0	0	3,809	0	0	0	0	0	0

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 (Dollar Amounts in Thousands)

Comparison by activity/subactivity			FY 2010		FY 2011		FY 2012		FY 2012		Increase/ Decrease	
			Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
			Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Administrative Efficiency Initiative	Pos/BA		0	0	0	0	0	0	0	(1,856)	0	(1,856)
	FTE/OBL		0	0	0	0	0	0	0	(1,856)	0	(1,856)
Total Undistributed Costs	Pos/BA		0	0	0	3,809	0	0	0	(1,856)	0	(1,856)
	FTE/OBL		0	0	0	3,809	0	0	0	(1,856)	0	(1,856)
Total NESS - ORF	Pos/BA		712	198,966	712	197,061	429	112,827	429	117,890	0	5,063
	FTE/OBL		623	199,425	678	197,700	409	112,827	409	117,890	0	5,063
Total NESS - PAC	Pos/BA		162	1,198,160	162	1,199,357	158	1,176,235	158	1,897,536	0	721,301
	FTE/OBL		180	1,239,198	153	1,200,080	149	1,176,235	149	1,897,536	0	721,301
Total NESS	Pos/BA		874	1,397,126	874	1,396,418	587	1,289,062	587	2,015,426	0	726,364
	FTE/OBL		803	1,438,623	831	1,397,780	558	1,289,062	558	2,015,426	0	726,364
Program Support												
Corporate Services												
Under Secretary and Associate Offices	Pos/BA		229	28,438	229	28,138	177	28,855	177	28,920	0	65
	FTE/OBL		145	28,294	219	28,282	154	28,855	154	28,920	0	65
NOAA Wide Corporate Services & Agency Management	Pos/BA		831	174,433	831	165,906	846	178,085	852	187,949	6	9,864
	FTE/OBL		718	163,111	790	177,266	806	178,085	811	187,949	5	9,864
Office of Chief Information Officer (CIO)	Pos/BA		0	9,089	0	8,993	0	9,332	11	18,432	11	9,100
	FTE/OBL		0	9,086	0	8,996	0	9,332	8	18,432	8	9,100

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Comparison by activity/subactivity		FY 2010		FY 2011		FY 2012		FY 2012		Increase/ Decrease	
		Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Total: Corporate Services	Pos/BA	1,060	211,960	1,060	203,037	1,023	216,272	1,040	235,301	17	19,029
	FTE/OBL	863	200,491	1,009	214,544	960	216,272	973	235,301	13	19,029
NOAA Education Program											
NOAA Education Program	Pos/BA	11	58,499	11	38,116	22	38,710	22	20,840	0	(17,870)
	FTE/OBL	27	59,544	10	38,730	21	38,710	21	20,840	0	(17,870)
Total: NOAA Education Program	Pos/BA	11	58,499	11	38,116	22	38,710	22	20,840	0	(17,870)
	FTE/OBL	27	59,544	10	38,730	21	38,710	21	20,840	0	(17,870)
Facilities											
NOAA Facilities Management, Construction and Maintenance	Pos/BA	5	30,346	5	30,025	46	31,005	47	41,763	1	10,758
	FTE/OBL	45	30,312	4	30,061	46	31,005	47	41,763	1	10,758
Environmental Compliance & Safety	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	0	0	0	0	0	0	0	0	0
Total: Facilities	Pos/BA	5	30,346	5	30,025	46	31,005	47	41,763	1	10,758
	FTE/OBL	45	30,312	4	30,061	46	31,005	47	41,763	1	10,758
Undistributed Costs											
Congressionally Directed Projects	Pos/BA	0	0	0	15,069	0	15,230	0	0	0	(15,230)
	FTE/OBL	0	0	0	15,069	0	15,230	0	0	0	(15,230)

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Comparison by activity/subactivity			FY 2010		FY 2011		FY 2012		FY 2012		Increase/ Decrease	
			Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
			Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Administrative Efficiency Initiative	Pos/BA		0	0	0	0	0	0	0	(3,274)	0	(3,274)
	FTE/OBL		0	0	0	0	0	0	0	(3,274)	0	(3,274)
Total: Undistributed Costs	Pos/BA		0	0	0	15,069	0	15,230	0	(3,274)	0	(18,504)
	FTE/OBL		0	0	0	15,069	0	15,230	0	(3,274)	0	(18,504)
Total Program Support ORF without OMAO	Pos/BA		1,076	300,805	1,076	286,247	1,091	301,217	1,109	294,630	18	(6,587)
	FTE/OBL		935	290,347	1,023	298,404	1,027	301,217	1,041	294,630	14	(6,587)
Total Program Support PAC without OMAO	Pos/BA		0	0	0	0	0	0	0	900	0	900
	FTE/OBL		3	95,195	0	2,070	0	0	0	900	0	900
TOTAL Program Support	Pos/BA		1,076	300,805	1,076	286,247	1,091	301,217	1,109	295,530	18	(5,687)
	FTE/OBL		938	385,542	1,023	300,474	1,027	301,217	1,041	295,530	14	(5,687)
OMAO												
Marine Operations & Maintenance & Aviation Operations												
Marine Operations & Maintenance	Pos/BA		948	120,005	948	118,856	948	131,969	955	132,161	7	192
	FTE/OBL		845	120,910	918	119,154	923	131,969	928	132,161	5	192
Fleet Planning and Maintenance	Pos/BA		3	17,017	3	16,854	3	17,470	3	27,035	0	9,565
	FTE/OBL		18	28,059	3	16,974	3	17,470	3	27,035	0	9,565
Aviation Operations	Pos/BA		109	29,479	109	29,197	109	30,520	109	29,358	0	(1,162)
	FTE/OBL		125	29,461	104	29,251	104	30,520	104	29,358	0	(1,162)

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 (Dollar Amounts in Thousands)

Comparison by activity/subactivity		FY 2010		FY 2011		FY 2012		FY 2012		Increase/ Decrease	
		Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Total: Marine Operations & Maintenance and Aviation Operations	Pos/BA	1,060	166,501	1,060	164,907	1,060	179,959	1,067	188,554	7	8,595
	FTE/OBL	988	178,430	1,025	165,379	1,030	179,959	1,035	188,554	5	8,595
Undistributed Costs											
Congressionally Directed Projects	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	0	0	0	0	0	0	0	0	0
Administrative Efficiency Initiative	Pos/BA	0	0	0	0	0	0	0	(3,526)	0	(3,526)
	FTE/OBL	0	0	0	0	0	0	0	(3,526)	0	(3,526)
Total: Undistributed Costs	Pos/BA	0	0	0	0	0	0	0	(3,526)	0	(3,526)
	FTE/OBL	0	0	0	0	0	0	0	(3,526)	0	(3,526)
Total OMAO - ORF	Pos/BA	1,060	166,501	1,060	164,907	1,060	179,959	1,067	185,028	7	5,069
	FTE/OBL	988	178,430	1,025	165,379	1,030	179,959	1,035	185,028	5	5,069
Total OMAO - PAC	Pos/BA	0	1,998	5	2,000	5	2,000	5	14,026	0	12,026
	FTE/OBL	3	81,587	5	2,190	5	2,000	5	14,026	0	12,026
Medicare Eligible Retiree Health Care Fund	Pos/BA	0	1,822	0	1,822	0	1,936	0	1,936	0	0
	FTE/OBL	0	1,822	0	1,822	0	1,936	0	1,936	0	0
NOAA Corp Commissioned Officers Retirement	Pos/BA	0	26,116	0	28,269	0	28,269	0	28,269	0	0
	FTE/OBL	0	23,293	0	28,269	0	28,269	0	28,269	0	0

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Comparison by activity/subactivity		FY 2010		FY 2011		FY 2012		FY 2012		Increase/ Decrease	
		Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
TOTAL OMAO	Pos/BA	1,060	196,437	1,065	196,998	1,065	212,164	1,072	229,259	7	17,095
	FTE/OBL	991	285,132	1,030	197,660	1,035	212,164	1,040	229,259	5	17,095
NOAA ORF	Pos/BA	12,772	3,465,216	12,772	3,376,409	12,780	3,486,151	12,908	3,443,807	128	(42,344)
	FTE/OBL	12,015	3,462,475	12,130	3,422,976	12,177	3,492,151	12,274	3,449,807	97	(42,344)
NOAA PAC	Pos/BA	200	1,330,995	200	1,358,353	194	1,349,039	194	2,052,777	0	703,738
	FTE/OBL	240	1,671,916	190	1,392,754	184	1,356,039	184	2,059,777	0	703,738
NOAA OTHER	Pos/BA	21	139,761	21	131,755	21	137,847	21	122,847	0	(15,000)
	FTE/OBL	21	149,221	21	207,837	21	152,147	21	137,497	0	(14,650)

NATIONAL OCEAN SERVICE
(\$ in Thousands)

FY 2012 PROPOSED OPERATING PLAN	FY 2010 ENACTED (Conference)	FY 2011 Annualized Continuing Resolution	Other Adj	FTE	Climate Reorg	FTE	FY 2011 Calculated ATBs (w/o pay raise)	FY 2012 Calculated ATBs (w/o pay raise)	FTE	FY 2012 Technical ATB's	FTE	FY 2012 Base	FTE	FY 2012 Program Changes	FTE	FY 2012 Estimate
Navigation Services																
Mapping & Charting																
Mapping & Charting Base	49,487	48,964	523				768	1,187			262	51,442		250	262	51,692
Joint Hydrographic Center	0	0	0								0	0		0	0	0
Hydrographic Research & Technology Development	7,424	7,346	78								0	7,424		0	0	7,424
Navigation Products	0	0	0								0	0		0	0	0
Electronic Navigational Charts	6,128	6,063	65								0	6,128		0	0	6,128
Shoreline Mapping	2,424	2,398	26								0	2,424		0	0	2,424
Address Survey Backlog/Contracts	31,173	30,844	329								10	31,173		0	10	31,173
California Seafloor Mapping, CA	300	0	0								0	0		0	0	0
Extended Continental Shelf Mapping, AK	300	0	0								0	0		0	0	0
Subtotal, Mapping and Charting	97,236	95,615	1,021	0	0	0	768	1,187	0	0	272	98,591	0	250	272	98,841
Geodesy																
Geodesy Base	26,417	26,138	279				300	284			149	27,001		0	149	27,001
National Height Modernization	2,541	2,514	27								5	2,541		0	5	2,541
Regional Geospatial Modeling Grants	5,500	5,442	58								0	5,500		(5,500)	0	0
Geodesy/Height Modernization - IL	800	0	0								0	0		0	0	0
Louisiana Geodetic Spatial Reference Center, LA	700	0	0								0	0		0	0	0
Wisconsin Height Modernization Program, WI	1,000	0	0								0	0		0	0	0
Texas Height Modernization	300	0	0								0	0		0	0	0
Subtotal, Geodesy	37,258	34,094	364	0	0	0	300	284	0	0	154	35,042	0	(5,500)	154	29,542
Tide & Current Data																
Tide & Current Data Base	33,078	32,729	349				294	407			124	33,779		(4,800)	124	28,979
Coastal Tidal Gauges	600	0	0								0	0		0	0	0
Subtotal, Tide & Current Data	33,678	32,729	349	0	0	0	294	407	0	0	124	33,779	0	(4,800)	124	28,979
Total, Navigation Services	168,172	162,438	1,734	0	0	0	1,362	1,878	0	0	550	167,412	0	(10,050)	550	157,362
Ocean Resources Conservation and Assessment																
Ocean Assessment Program (OAP)																
Coastal and Marine Spatial Planning	0	0	0								0	0	9	6,770	9	6,770
Ocean Research Priorities Plan Implementation	6,000	5,937	63						(1)	(6,000)	0	0		0	0	0
IOOS Regional Observations	27,000	26,715	285						1	3,000	5	30,000		1,055	5	31,055
NOAA IOOS	6,555	6,486	69				53	94			20	6,702		0	20	6,702
Gulf of Mexico Regional Collaboration	4,750	4,700	50								0	4,750		(4,750)	0	0
Alliance for Coastal Technologies	500	0	0								0	0		0	0	0
Coastal Storms	2,800	2,770	30								0	2,800		74	0	2,874
Coastal Services Center (CSC)	26,643	26,362	281				235	421		3,000	82	30,299	2	0	84	30,299
Ocean Health Initiative	4,000	3,958	42						(2)	(4,000)	0	0	0	0	0	0
Coral Reef Program	29,000	28,694	306				108	224			4	29,332		(2,273)	4	27,059
Hawaii Coral Reef Initiative	1,000	0	0								0	0		0	0	0
Florida Coral Reef	200	0	0								0	0		0	0	0
Coral Reef - Puerto Rico	100	0	0								0	0		0	0	0
Resilient Coastal Urban Community and Ecosystem (RESCUE) Initiative	250	0	0								0	0		0	0	0
Northeast Coastal Monitoring Collaborative	550	0	0								0	0		0	0	0
Aquarius Reef Base Program	150	0	0								0	0		0	0	0
West Coast Governor's Agreement on Ocean Health	500	0	0								0	0		0	0	0

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(\$ in Thousands)

FY 2012 PROPOSED OPERATING PLAN	FY 2010 ENACTED (Conference)	FY 2011 Annualized Continuing Resolution	Other Adj	FTE	Climate Reorg	FTE	FY 2011 Calculated ATBs (w/o pay raise)	FY 2012 Calculated ATBs (w/o pay raise)	FTE	FY 2012 Technical ATB's	FTE	FY 2012 Base	FTE	FY 2012 Program Changes	FTE	FY 2012 Estimate
International Pacific Research Center	1,500	0	0								0	0			0	0
Engineering Feasibility Study, Dauphin Island, AL	1,500	0	0								0	0			0	0
Subtotal, Ocean Assessment Program (OAP)	112,998	105,622	1,126	0	0	0	396	739	(2)	(4,000)	111	103,883	11	876	122	104,759
Response and Restoration																
Response and Restoration Base	10,834	10,720	114				248	288		9,300	110	20,670		1,900	110	22,570
Estuary Restoration Program	3,000	2,968	32								5	3,000		(1,812)	5	1,188
Damage Assessment Program	9,300	9,202	98							(9,300)	0	0			0	0
Marine Debris	4,000	3,958	42								3	4,000		0	3	4,000
Eastern Kentucky PRIDE, Inc	1,000	0	0								0	0			0	0
Subtotal, Response and Restoration	28,134	26,848	286	0	0	0	248	288	0	0	118	27,670	0	88	118	27,758
National Centers for Coastal Ocean Science (NCCOS)																
Nat'l Ctrs for Coastal Ocean Science (NCCOS)		0	0				568	454	2	42,500	199	43,522		(3,312)	199	40,210
Competitive Research	16,000	15,831	169								0	16,000		(199)	0	15,801
Ctr for Coastal Environ Health & Bimolecular Rsch	11,300	11,181	119							(11,300)	0	0			0	0
Oxford, MD	4,500	4,452	48							(4,500)	0	0			0	0
Ctr for Coastal Fisheries Habitat Research	5,000	4,947	53							(5,000)	0	0			0	0
Center for Coastal Monitoring & Assessment	7,000	6,926	74							(7,000)	0	0			0	0
Center for Sponsored Coastal Ocean Research	2,700	2,671	29							(2,700)	0	0			0	0
NCCOS Headquarters	4,000	3,958	42							(4,000)	0	0			0	0
Center for Human Health Risk (Marine Env Health Research Lab - MEHRL)	4,000	3,958	42							(4,000)	0	0			0	0
Ocean and Human Health	0	0	0							0	0	0			0	0
Western Pacific Coral Reef Ecosystems Studies Program (CSCOR), Guam	300	0	0							0	0	0			0	0
Subtotal, NCCOS	54,800	53,924	576	0	0	0	568	454	2	4,000	199	59,522	0	(3,511)	199	56,011
Total, Ocean Resources Conservation & Assessment	195,932	186,394	1,988	0	0	0	1,212	1,481	0	0	428	191,075	11	(2,547)	439	188,528
Ocean and Coastal Management																
Coastal Management																
CZM Grants	68,146	67,426	720								0	68,146		(2,000)	0	66,146
CZM and Stewardship	8,500	8,410	90				227	138			57	8,865			57	8,865
Regional Ocean Partnership Grants	0	0	0								0	0	1	20,000	1	20,000
Working Waterfronts	0	0	0								0	0		8,000		8,000
Nat'l Estuarine Rsrch Reserve Sys - NERRS	23,500	23,252	248								0	23,500		(1,174)	0	22,326
Marine Protected Areas	3,000	2,968	32								9	3,000		(872)	9	2,128
Energy Licensing and Appeals	1,900	1,880	20			1					4	1,900	0	(1,200)	4	700
Subtotal, Coastal Management	105,046	103,936	1,110	0	0	1	227	138	0	0	70	105,411	1	22,754	71	128,165
Ocean Management																
Marine Sanctuary Program																
Marine Sanctuary Program Base (Nancy Foster Scholarship 1% of base)	49,000	48,482	518				475	612			182	50,087		(4,051)	182	46,036
Northwest Straits Citizens Advisory Commission	1,600	0	0								0	0			0	0
Hawaii Inst. Of Marine Biology Coral Research, HI	2,250	0	0								0	0			0	0
Mariana Islands Sanctuary Scoping and Outreach	220	0	0								0	0			0	0
Subtotal, Ocean Management	53,070	48,482	518	0	0	0	475	612	0	0	182	50,087	0	(4,051)	182	46,036
Total, Ocean and Coastal Management	158,116	152,418	1,628	0	0	1	702	750	0	0	252	155,498	1	18,703	253	174,201

NATIONAL OCEAN SERVICE
(\$ in Thousands)

FY 2012 PROPOSED OPERATING PLAN	FY 2010 ENACTED (Conference)	FY 2011 Annualized Continuing Resolution	Other Adj	FTE	Climate Reorg	FTE	FY 2011 Calculated ATBs (w/o pay raise)	FY 2012 Calculated ATBs (w/o pay raise)	FTE	FY 2012 Technical ATB's	FTE	FY 2012 Base	FTE	FY 2012 Program Changes	FTE	FY 2012 Estimate
Congressionally Directed Projects		15,455	165									15,620		(15,620)		0
Administrative Efficiency Initiative														(8,872)		(8,872)
Total, National Ocean Service - ORF	522,220	516,705	5,515	0	0	1	3,276	4,109	0	0	1,230	529,605	12	(18,386)	1,242	511,219
Other National Ocean Service Accounts																
Total, National Ocean Service - PAC	40,890	40,890	0	0	0	0	0	0	0	0	1	40,890	0	(9,156)	1	31,734
Total, National Ocean Service - Other	15,600	55,326	0	0	0	0	0	0	0	(38,726)	16	16,600	0	0	16	16,600
GRAND TOTAL NOS	578,710	612,921	5,515	0	0	1	3,276	4,109	0	(38,726)	1,247	587,095	12	(27,542)	1,259	559,553

NATIONAL MARINE FISHERIES SERVICE
(\$ in Thousands)

FY 2012 PROPOSED OPERATING PLAN	FY 2010 ENACTED (Conference)	FY 2011 Annualized Continuing Resolution	Other Adj	FTE	Climate Reorg	FTE	FY 2011 Calculated ATBs (w/o pay raise)	FY 2012 Calculated ATBs (w/o pay raise)	FTE	FY 2012 Technical ATB's	FTE	FY 2012 Base	FTE	FY 2012 Program Changes	FTE	FY 2012 Estimate
Protected Species Research and Management																
Protected Species Research and Management Programs Base	39,850	39,429	421			5	759	519			174	41,128	9	5,500	183	46,628
Species Recovery Grants	15,623	15,458	165			2	170	24			9	15,817		8,000	9	23,817
Marine Mammals	49,653	49,128	525			4	636	439			163	50,728		(2,302)	163	48,426
Marine Turtles	14,576	14,422	154				224	127			55	14,927		(4,348)	55	10,579
Other Protected Species (Marine Fish, Plants, and Invertebrates)	8,375	8,287	88				76	77			33	8,528		0	33	8,528
Atlantic Salmon	8,500	8,410	90				35	67			27	8,602		(500)	27	8,102
Pacific Salmon (for Salmon Management Activities, see FRM)	65,000	64,313	687			7	1,325	508			356	66,833	3	3,668	359	70,501
Alaska Sea Otter and Steller Sea Lion Commission, AK	300	0	0								0	0			0	0
Hawaiian Monk Seals, HI	275	0	0								0	0			0	0
Emergency Response and Health Investigations for Endangered/Threatened Pinn	300	0	0								0	0			0	0
Center for Marine Education and Research Ocean Expo-Learning Center	1,000	0	0								0	0			0	0
Marine Mammal Research, AK	500	0	0								0	0			0	0
Subtotal, Protected Species Research and Management	203,952	199,447	2,130	0	0	18	3,225	1,761	0	0	817	206,563	12	10,018	829	216,581
Fisheries Research and Management																
Fisheries Research and Management Programs	190,883	188,866	2,017			8	3,558	2,007	(7)	(11,400)	825	185,048		(750)	825	184,298
National Catch Share Program	0	0	0			0			7	17,402	7	17,402	10	36,600	17	54,002
Expand Annual Stock Assessments - Improve Data Collection	50,995	50,456	539			2	583	542			137	52,120	10	15,000	147	67,120
Economics & Social Sciences Research	10,744	10,630	114			2	195	105			24	11,044		0	24	11,044
Salmon Management Activities	50,942	50,404	538				59	91			13	51,092		(23,500)	13	27,592
Regional Councils and Fisheries Commissions	31,855	31,518	337				244	601			6	32,700		0	6	32,700
Fisheries Statistics	21,068	20,845	223				220	158			105	21,446	3	3,000	108	24,446
Fish Information Networks	22,066	21,833	233				65	109			13	22,240		0	13	22,240
Survey and Monitoring Projects	23,759	23,508	251				259	185			128	24,203		0	128	24,203
Fisheries Oceanography	1,999	1,978	21			1	78	97			4	2,174	5	5,400	9	7,574
American Fisheries Act	5,503	5,445	58				62	44			35	5,609		0	35	5,609
Interjurisdictional Fisheries Grants	2,574	2,547	27				1	2			0	2,577		0	0	2,577
National Standard 8	1,060	1,049	11				13	13			5	1,086		0	5	1,086
Reduce Fishing Impacts on Essential Fish Habitat (EFH)	529	523	6				6	4			3	539		0	3	539
Reducing Bycatch	3,398	3,362	36				35	49			9	3,482		0	9	3,482
Product Quality and Safety	7,342	7,264	78				118	52			52	7,512		0	52	7,512
Oyster Hatchery Economic Pilot Program, Morgan State University, MD	200	0	0								0	0			0	0
Hawaii Seafood Safety and Inspections, HI	1,500	0	0								0	0			0	0
Scallop Fishery Assessment, MA	1,000	0	0								0	0			0	0
Maine Groundfish Industry Emergency Economic Assistance, ME	1,000	0	0								0	0			0	0
Disease Reduction in Klamath River Salmon, OR	600	0	0								0	0			0	0
Shrimp Industry Fishing Effort Research Continuation, MD	700	0	0								0	0			0	0
Virginia Trawl Survey, VA	300	0	0								0	0			0	0
Ecosystem Based Fisheries Management, AL	750	0	0								0	0			0	0
Hawaii Fisheries Development, HI	400	0	0								0	0			0	0
NH Commercial Fisherman Sustainability Initiative	825	0	0								0	0			0	0
Institute for Seafood Studies	325	0	0								0	0			0	0
Gulf of Mexico Recreational Fishery Electronic Logbook Pilot	50	0	0								0	0			0	0
Herring Monitoring Research	300	0	0								0	0			0	0
Turtle Protection Funding/Gulf of Mexico Grouper Fishery	250	0	0								0	0			0	0
Subtotal, Fisheries Research and Management	432,917	420,228	4,489	0	0	13	5,496	4,059	0	6,002	1,366	440,274	28	35,750	1,394	476,024

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Enforcement & Observers/Training																
Enforcement	65,673	64,979	694			5	1,198	755			248	67,626		(600)	248	67,026
Observers/Training	41,074	40,640	434			5	648	474			137	42,196		(3,015)	137	39,181
Subtotal, Enforcement & Observers/Training	106,747	105,619	1,128	0	0	10	1,846	1,229	0	0	385	109,822	0	(3,615)	385	106,207
Habitat Conservation & Restoration																
Sustainable Habitat Management	22,376	22,140	236				222	196			95	22,794		0	95	22,794
Fisheries Habitat Restoration (CBRP & Open Rivers)	27,967	27,672	295				126	169			54	28,262		2,544	54	30,806
Bronx River Restoration, NY	1,000	0	0								0	0			0	0
Chesapeake Bay Oyster Restoration, MD	3,000	0	0								0	0			0	0
Merrimack River Fish Habitat, NH	300	0	0								0	0			0	0
Natural Stream Restoration Program, WV	1,500	0	0								0	0			0	0
Pontchartrain Basin Restoration	250	0	0								0	0			0	0
Narragansett Bay Shellfish Restoration	500	0	0								0	0			0	0
Protected Species Habitat at Kure Atoll (HI)	100	0	0								0	0			0	0
Hawaii Marine Fund	1,000	0	0								0	0			0	0
Ecosystem Vitality Through Habitat Restoration	200	0	0								0	0			0	0
Subtotal, Habitat Conservation & Restoration	58,193	49,812	531	0	0	0	348	365	0	0	149	51,056	0	2,544	149	53,600
Other Activities Supporting Fisheries																
Antarctic Research	2,718	2,689	29				28	33			9	2,779		0	9	2,779
Aquaculture	6,000	5,937	63				45	80			15	6,125	1	2,352	16	8,477
Climate Regimes & Ecosystem Productivity	4,811	4,760	51			1	79	58		(1,500)	14	3,448		0	14	3,448
Computer Hardware and Software - FY 2004 Omnibus Funded in PAC	3,460	3,423	37				26	55			0	3,541		0	0	3,541
Cooperative Research	17,567	17,381	186				70	169		(6,002)	30	11,804	(13)	(4,565)	17	7,239
Information Analyses & Dissemination	19,905	19,695	210				295	137			63	20,337		0	63	20,337
Marine Resources Monitoring, Assessment & Prediction Prgm (MarMap)	842	833	9								0	842		0	0	842
National Environmental Policy Act (NEPA)	8,336	8,248	88				82	75			0	8,493		0	0	8,493
NMFS Facilities Maintenance	6,535	6,466	69				52	139			0	6,726		0	0	6,726
Southwest Fisheries Science Center	1,000	989	11								0	1,000		(1,000)	0	0
Regional Studies	7,206	7,130	76				47	136			12	7,389	4	5,000	16	12,389
New England Fisheries Assistance	9,000	8,905	95								0	9,000		(9,000)	0	0
Yukon River Drainage Association	100	0	0								0	0		0	0	0
New England Multi-Species Survey	3,000	0	0								0	0		0	0	0
Science Consortium for Ocean Replenishment at Mote marine Lab	1,500	0	0								0	0		0	0	0
Maine Lobster Research	200	0	0								0	0		0	0	0
Consortium for Wildlife Bycatch Reduction MA & NH	1,250	0	0								0	0		0	0	0
Joint Institute for Marine and Atmospheric Research, HI	1,250	0	0								0	0		0	0	0
Continuation of Protected Species Bycatch Reduction Maine Groundline Exchange	550	0	0								0	0		0	0	0
Western and Central Pacific Fisheries Commission (WCPFC) Big Eye Tuna Quota	3,000	0	0								0	0		0	0	0
Cooperative Research and Technical Assistance, RI	600	0	0								0	0		0	0	0
Emergency Plan to Save Oyster Production on the West Coast	500	0	0								0	0		0	0	0
US/Canada Yukon River Salmon Agreement Studies	500	0	0								0	0		0	0	0
Western Pacific Integrated Ecosystem Assessments	500	0	0								0	0		0	0	0
Partnership for Mid-Atlantic Fisheries Science (PMAFS) Fish Stock Imp	1,000	0	0								0	0		0	0	0
Bering Sea Crab Management and Research	300	0	0								0	0		0	0	0
Metagenomic Analysis of Chesapeake Bay	100	0	0								0	0		0	0	0
Magnuson-Stevens: Marine Education and Training	1,000	0	0								0	0		0	0	0
Subtotal, Other Activities Supporting Fisheries	102,730	86,456	924	0	0	1	724	882	0	(7,502)	143	81,484	(8)	(7,213)	135	74,271

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Congressionally Directed Projects		33,418	357									33,775		(33,775)		0
Administrative Efficiency Initiative												0		(16,271)		(16,271)
Total, National Marine Fisheries Service - ORF	904,539	894,980	9,559	0	0	42	11,639	8,296	0	(1,500)	2,860	922,974	32	(12,562)	2,892	910,412
Other National Marine Fisheries Service Accounts																
Total, National Marine Fisheries Service - PAC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total, National Marine Fisheries Service - Other	103,642	122,420	0	0	0	0	0	0	0	(15,078)	5	105,342	0	(14,650)	5	90,692
GRAND TOTAL NMFS	1,008,181	1,017,400	9,559	0	0	42	11,639	8,296	0	(16,578)	2,865	1,028,316	32	(27,212)	2,897	1,001,104

OFFICE of OCEANIC AND ATMOSPHERIC RESEARCH
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Climate Research																
Laboratories & Cooperative Institutes																
Laboratories & Cooperative Institutes	54,848	54,269	579	(139)	(33,312)		410	236			110	22,182		0	110	22,182
Subtotal, Laboratories & Cooperative Institutions	54,848	54,269	579	(139)	(33,312)	0	410	236	0	0	110	22,182	0	0	110	22,182
Climate Data & Information																
Climate Data & Information	12,080	11,952	128	(3)	(12,080)		0				0	0		0	0	0
Subtotal, Climate Data & Information	12,080	11,952	128	(3)	(12,080)	0	0	0	0	0	0	0	0	0	0	0
Competitive Research Program																
Competitive Research Program (incl. NIDIS)	144,199	142,676	1,523	(107)	(140,199)		0			(4,000)	0	0		0	0	0
Regional Climate Assessments	9,000	8,905	95		(9,000)						0	0		0	0	0
Subtotal, Competitive Research Program	153,199	151,581	1,618	(107)	(149,199)	0	0	0	0	(4,000)	0	0	0	0	0	0
Climate Operations																
Climate Operations	913	903	10		(913)						0	0		0	0	0
Subtotal, Climate Operations	913	903	10	0	(913)	0	0	0	0	0	0	0	0	0	0	0
Other Partnership Programs																
Climate System Research Center	495	0	0								0	0		0	0	0
Climate Change and Air Pollutant Impacts to NE's Rare Alpine Zone, NH	350	0	0								0	0		0	0	0
Integrating Climate Change Into the Restoration of the Chesapeake Bay	3,000	0	0								0	0		0	0	0
Development of Earth System Information, MD	150	0	0								0	0		0	0	0
Carbon Sequestration and Climate Change Models for NY State Forests	100	0	0								0	0		0	0	0
Subtotal, Other Partnership Programs	4,095	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total, Climate Research	225,135	218,705	2,335	(249)	(195,504)	0	410	236	0	(4,000)	110	22,182	0	0	110	22,182
Weather & Air Quality Research																
Laboratories & Cooperative Institutes																
Laboratories & Cooperative Institutes	54,425	53,850	575	(27)	(14,921)	1	506	377			162	40,387		(975)	162	39,412
Nutrient & Mercury Speciation Measurement Stations	650	643	7								0	650		(650)	0	0
Subtotal, Laboratories & Cooperative Institutes	55,075	54,493	582	(27)	(14,921)	1	506	377	0	0	162	41,037	0	(1,625)	162	39,412
Weather & Air Quality Research Programs																
U.S. Weather Research Program (USWRP) (THORPEX)	5,500	5,442	58				8	65			17	5,573		(1,300)	17	4,273
Tornado Severe Storm Research / Phased Array Radar	3,972	3,930	42				50	15			4	4,037		6,000	4	10,037
Subtotal, Weather & Air Quality Research Programs	9,472	9,372	100	0	0	0	58	80	0	0	21	9,610	0	4,700	21	14,310
Other Partnership Programs																
National Weather Radar Testbed Phased Array Radar, OK	2,000	0	0								0	0		0	0	0
Redstone UAS Development for Weather and Atmospheric Research, AL	300	0	0								0	0		0	0	0
AIRMAP at Univ. of New Hampshire, NH	500	0	0								0	0		0	0	0
Boise Center Aerospace Laboratory (BCAL) Watershed Modeling -LiDAR	500	0	0								0	0		0	0	0
Univ of Tennessee - Atmospheric Science Research, TN	1,000	0	0								0	0		0	0	0
Southeastern Mercury Consortium, FL	500	0	0								0	0		0	0	0
Aviation and Hurricane Research Utilizing Unmanned Aerial Systems, FL	300	0	0								0	0		0	0	0
Observing, Modeling, and Visualizing Storm Surge Inundation, FL	100	0	0								0	0		0	0	0
New England Weather Technology and Research Initiative, NH	250	0	0								0	0		0	0	0
Subtotal, Other Partnership Programs	5,450	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

OFFICE of OCEANIC AND ATMOSPHERIC RESEARCH
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Total, Weather & Air Quality Research	69,997	63,865	682	(27)	(14,921)	1	564	457	0	0	183	50,647	0	3,075	183	53,722
Ocean, Coastal, and Great Lakes Research																
Laboratories & Cooperative Institutes																
Laboratories & Cooperative Institutes	21,840	21,609	231				383	186			119	22,409			119	22,409
Subtotal, Laboratories & Cooperative Institutes	21,840	21,609	231	0	0	0	383	186	0	0	119	22,409	0	0	119	22,409
National Sea Grant College Program																
National Sea Grant College Program Base	56,200	55,606	594				66	70			23	56,336		885	23	57,221
Aquatic Invasive Species Program	2,000	1,979	21				3				3	2,003		(1,001)	3	1,002
Marine Aquaculture Program	4,800	4,749	51				1				1	4,801		(478)	1	4,323
Subtotal, National Sea Grant College Program	63,000	62,334	666	0	0	0	70	70	0	0	27	63,140	0	(594)	27	62,546
Ocean Exploration and Research																
Ocean Exp & Rsrch (NURP moved in FY08)		30,391	325				0	207			17	30,923		(1,400)	17	29,523
Ocean Exploration	21,816	0	0								0	0			0	0
National Undersea Research Program	8,900	0	0								0	0			0	0
Subtotal, Ocean Exploration and Research	30,716	30,391	325	0	0	0	0	207	0	0	17	30,923	0	(1,400)	17	29,523
Other Ecosystems Programs																
Integrated Ocean Acidification	0	0	0							5,500	0	5,500	3	6,100	3	11,600
Subtotal, Other Ecosystems Programs	0	0	0	0	0	0	0	0	0	5,500	0	5,500	3	6,100	3	11,600
Invasive Species & Partnership Programs																
National Institute of Undersea Science and Technology, MS	5,000		0								0	0			0	0
National Sea Grant Law Center, MS	750		0								0	0			0	0
NOAA Northern Gulf Institute	4,500		0								0	0			0	0
Hyperspectral Remote Sensing/Mgmt of Invasive Species Detroit River Int'l Wild	500		0								0	0			0	0
Marine Aquaculture Lab Operations, MS	3,700		0								0	0			0	0
Lake Erie Hydrological & Climate Modeling, OH	100		0								0	0			0	0
Monitoring of Lake Erie Water Quality with Remote Sensing, OH	500		0								0	0			0	0
Subtotal, Other Partnership Programs	15,050	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total, Ocean, Coastal, & Great Lakes Rsrch	130,606	114,334	1,222	0	0	0	453	463	0	5,500	163	121,972	3	4,106	166	126,078
Info Tech R&D,																
High Performance Computing Initiatives	13,028	12,890	138				29	156			13	13,213		53	13	13,266
Total, Info Tech R&D	13,028	12,890	138	0	0	0	29	156	0	0	13	13,213	0	53	13	13,266
Congressionally Directed Projects		24,335	260		(5,095)							19,500		(19,500)		0
Administrative Efficiency Initiative												0		(3,235)		(3,235)
Total, Office of Oceanic and Atmospheric Research - ORF	438,766	434,129	4,637	(276)	(215,520)	1	1,456	1,312	0	1,500	469	227,514	3	(15,501)	472	212,013
Other Office of Oceanic and Atmospheric Research Accounts																
Total, Office of Ocean and Atmospheric Research - PAC	10,379	10,379	0	0	(10,379)	0	0	0	0	0	0	0	0	0	0	0
Total, Office of Oceanic and Atmospheric Research - Other	0															
GRAND TOTAL OAR	449,145	444,508	4,637	(276)	(225,899)	1	1,456	1,312	0	1,500	469	227,514	3	(15,501)	472	212,013

CLIMATE SERVICE
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Climate Research																
Modeling	0	0		72	23,484	2	247	514			74	24,245	10	6,980	84	31,225
Physical Sciences	0	0		52	10,767		92	79			52	10,938	0	7,672	52	18,610
Chemical Sciences	0	0		40	17,831		122	96			40	18,049		(2,200)	40	15,849
Global Monitoring and Research	0	0		41	13,797		130	257			41	14,184	7	12,700	48	26,884
Competitive Research Program	0	0		45	69,729		7	345			45	70,081		(6,060)	45	64,021
Subtotal, Climate Research	0	0	0	250	135,608	2	598	1,291	0	0	252	137,497	17	19,092	269	156,589
Integrated Climate Service s																
NIDIS	0	0		1	13,514			77			1	13,591		0	1	13,591
Regional Services	0	0		6	4,881			7			6	4,888		(461)	6	4,427
Assessment Services	0	0		0	9,000			0			0	9,000	3	1,000	3	10,000
Communication & Education	0	0		0	1,400			138			0	1,538	2	1,500	2	3,038
Subtotal, Integrated Climate Service	0	0	0	7	28,795	0	0	222	0	0	7	29,017	5	2,039	12	31,056
Observations and Monitoring																
Ocean Observations	0	0		19	44,678			509			19	45,187	1	4,384	20	49,571
Climate Data and Information Services	0	0		152	52,777		335	697			152	53,809	4	(7,116)	156	46,693
Ocean Data and Information Services	0	0		55	13,890		44	50			55	13,984		38	55	14,022
Geophysical Data and Information Services	0	0		48	5,946		9	95			48	6,050		0	48	6,050
Environmental Services	0	0		0	9,994		24	65			0	10,083		0	0	10,083
Atmospheric Observations	0	0		3	5,240			44			3	5,284	0	0	3	5,284
Observations, Monitoring and Prediction for CPC	0	0		47	6,930		0	113			47	7,043		0	47	7,043
Subtotal, Observations & Monitoring	0	0	0	324	139,455	0	412	1,573	0	0	324	141,440	5	(2,694)	329	138,746
Congressionally Directed Projects					8,945							8,945		(8,945)		0
Administrative Efficiency Initiative												0		(4,564)		(4,564)
Total, Climate Service - ORF	0	0	0	581	312,803	2	1,010	3,086	0	0	583	316,899	27	4,928	610	321,827
Other Climate Service Accounts																
Total, Climate Service - PAC	0	0		0	36,425	0	0	0	0	0	0	36,425	0	(12,034)	0	24,391
Total, Climate Service - Other																
GRAND TOTAL CS	0	0	0	581	349,228	2	1,010	3,086	0	0	583	353,324	27	(7,106)	610	346,218

NATIONAL WEATHER SERVICE
(\$ in Thousands)

FY 2012 PROPOSED OPERATING PLAN	FY 2010 ENACTED (Conference)	FY 2011 Annualized Continuing Resolution	Other Adj	FTE	Climate Reorg	FTE	FY 2011 Calculated ATBs (w/o pay raise)	FY 2012 Calculated ATBs (w/o pay raise)	FTE	FY 2012 Technical ATB's	FTE	FY 2012 Base	FTE	FY 2012 Program Changes	FTE	FY 2012 Estimate
Operations and Research																
Local Warnings and Forecasts																
Local Warnings and Forecasts Base	617,842	611,314	6,528		(4,300)		8,422	4,936	2	3,504	4,090	630,404		6,639	4,090	637,043
Air Quality Forecasting	5,445	5,387	58								0	5,445		0	0	5,445
Alaska Data Buoys	1,683	1,665	18								0	1,683		0	0	1,683
Sustain Cooperative Observer Network	1,871	1,851	20								0	1,871		0	0	1,871
NOAA Profiler Network	4,756	4,706	50				10	75			7	4,841		0	7	4,841
Strengthen U.S. Tsunami Warning Network	23,264	23,018	246				16	261			19	23,541		0	19	23,541
Pacific Island Compact	3,515	3,478	37				100	100			0	3,715		0	0	3,715
National Mesonet Network	19,000	18,799	201								0	19,000		(19,000)	0	0
Susquehanna River Basin Flood System	2,400	0	0								0	0		0	0	0
Upper Spring River Flood Warning System	125	0	0								0	0		0	0	0
Subtotal, Local Warnings and Forecasts	679,901	670,218	7,158	0	(4,300)	0	8,548	5,372	2	3,504	4,116	690,500	0	(12,361)	4,116	678,139
Advanced Hydrological Prediction Services	6,037	5,973	64					82			0	6,119		0	0	6,119
Aviation Weather	11,363	11,243	120			1	175	111			5	11,649	4	26,944	9	38,593
WFO Maintenance	7,316	7,239	77					130			0	7,446		0	0	7,446
Remote Infrasonic Monitoring of Natural Hazards, MS	2,000	0	0								0	0		0	0	0
Regional Ensembling Sys for Atmosph Dispersion, MS	1,000	0	0								0	0		0	0	0
Joint Center for Hurricane Research, FL	500	0	0								0	0		0	0	0
Weather Radio Transmitters																
Weather Radio Transmitters Base	2,297	2,273	24								0	2,297		0	0	2,297
Delaware River Enhanced Flood Warning System	200	0	0								0	0		0	0	0
Subtotal, Weather Radio Transmitters	2,497	2,273	24	0	0	0	0	0	0	0	0	2,297	0	0	0	2,297
Subtotal, Local Warnings and Forecasts	710,614	696,946	7,443	0	(4,300)	1	8,723	5,695	2	3,504	4,121	718,011	4	14,583	4,125	732,594
Central Forecast Guidance																
Central Forecast Guidance	79,525	78,685	840	(47)	(6,930)		566	680			260	73,841			260	73,841
Subtotal, Central Forecast Guidance	79,525	78,685	840	(47)	(6,930)	0	566	680	0	0	260	73,841	0	0	260	73,841
Total, Operations and Research	790,139	775,631	8,283	(47)	(11,230)	1	9,289	6,375	2	3,504	4,381	791,852	4	14,583	4,385	806,435
Systems Operation & Maintenance (O&M)																
NEXRAD	46,121	45,634	487					500			103	46,621		127	103	46,748
ASOS	11,000	10,884	116					100			44	11,100		202	44	11,302
AWIPS	39,346	38,930	416					500			41	39,846		0	41	39,846
NWSTG Backup - CIP	5,512	5,454	58								0	5,512		0	0	5,512
Total, Systems Operation & Maintenance (O&M)	101,979	100,902	1,077	0	0	0	0	1,100	0	0	188	103,079	0	329	188	103,408

NATIONAL WEATHER SERVICE
(\$ in Thousands)

FY 2012 PROPOSED OPERATING PLAN	FY 2010 ENACTED (Conference)	FY 2011 Annualized Continuing Resolution	Other Adj	FTE	Climate Reorg	FTE	FY 2011 Calculated ATBs (w/o pay raise)	FY 2012 Calculated ATBs (w/o pay raise)	FTE	FY 2012 Technical ATB's	FTE	FY 2012 Base	FTE	FY 2012 Program Changes	FTE	FY 2012 Estimate
Congressionally Directed Projects		6,159	66									6,225		(6,225)		0
Administrative Efficiency Initiative												0		(13,055)		(13,055)
Total, National Weather Service - ORF	892,118	882,692	9,426	(47)	(11,230)	1	9,289	7,475	2	3,504	4,569	901,156	4	(4,368)	4,573	896,788
Other National Weather Service Accounts																
Total, National Weather Service - PAC	107,727	107,727	0	0	(3,734)	0	0	0	(2)	(3,504)	29	100,489	0	(9,299)	29	91,190
Total, National Weather Service - Other	0															
GRAND TOTAL NWS	999,845	990,419	9,426	(47)	(14,964)	1	9,289	7,475	0	0	4,598	1,001,645	4	(13,667)	4,602	987,978

NATIONAL ENVIRONMENTAL SATELLITE SERVICE
(\$ in Thousands)

FY 2012 PROPOSED OPERATING PLAN	FY 2010 ENACTED (Conference)	FY 2011 Annualized Continuing Resolution	Other Adj	FTE	Climate Reorg	FTE	FY 2011 Calculated ATBs (w/o pay raise)	FY 2012 Calculated ATBs (w/o pay raise)	FTE	FY 2012 Technical ATB's	FTE	FY 2012 Base	FTE	FY 2012 Program Changes	FTE	FY 2012 Estimate
Environmental Satellite Observing Systems																
Satellite Command and Control	39,562	39,144	418				488	431			174	40,481			174	40,481
NSOF Operations	7,810	7,727	83				150	153			0	8,113			0	8,113
Subtotal, Satellite Command and Control	47,372	46,871	501	0	0	0	638	584	0	0	174	48,594	0	0	174	48,594
Product Processing and Distribution																
Product Processing and Distribution	32,698	32,353	345				307	302			123	33,307		6,919	123	40,226
Subtotal, Product Processing and Distribution	32,698	32,353	345	0	0	0	307	302	0	0	123	33,307	0	6,919	123	40,226
Product Development, Readiness & Application																
Product Development, Readiness & Application	20,671	20,453	218				142	150			102	20,963		0	102	20,963
Prod Devel, Read & App (Ocean Remote Sensing)	3,979	3,937	42				52	37			0	4,068		0	0	4,068
Joint Center/Accelerate Use of Satellites	3,320	3,285	35				45	39			0	3,404		0	0	3,404
Subtotal, Product Development, Readiness & Application	27,970	27,675	295	0	0	0	239	226	0	0	102	28,435	0	0	102	28,435
Interagency Global Positioning System Executive Board Secretarial (IGEB)	0										0	0		0	0	0
Commercial Remote Sensing Licensing & Enforcement	1,301	1,287	14				10	13			5	1,324		0	5	1,324
Office of Space Commercialization	649	642	7				5	7			5	661		0	5	661
Group on Earth Observations (GEO)	500	495	5				6				0	506		0	0	506
Total, Environmental Satellite Observing Sys	110,490	109,323	1,167	0	0	0	1,205	1,132	0	0	409	112,827	0	6,919	409	119,746
Data Centers & Information Services																
Archive, Access & Assessment	67,255	66,544	711	(220)	(67,255)		0				0	0		0	0	0
KY			0	(6)							0	0		0	0	0
MD			0								0	0		0	0	0
NC - Quality Assurance/Quality Control			0	(2)							0	0		0	0	0
WV			0	(2)							0	0		0	0	0
Subtotal, Archive, Access & Assessment	67,255	66,544	711	(230)	(67,255)	0	0	0	0	0	0	0	0	0	0	0
Coastal Data Development	4,559	4,511	48	(16)	(4,559)		0				0	0		0	0	0
Regional Climate Centers	3,500	3,463	37		(3,500)						0	0		0	0	0
Environmental Data Systems Modernization	9,511	9,411	100	(23)	(9,511)		0				0	0		0	0	0
Integrated Environ Applications & Info Ctr	3,000	0	0								0	0		0	0	0
NOAA Regional Climate Center program	850		0								0	0		0	0	0
Total, Data Centers & Information Services	88,675	83,929	896	(269)	(84,825)	0	0	0	0	0	0	0	0	0	0	0

NATIONAL ENVIRONMENTAL SATELLITE SERVICE
(\$ in Thousands)

FY 2012 PROPOSED OPERATING PLAN	FY 2010 ENACTED (Conference)	FY 2011 Annualized Continuing Resolution	Other Adj	FTE	Climate Reorg	FTE	FY 2011 Calculated ATBs (w/o pay raise)	FY 2012 Calculated ATBs (w/o pay raise)	FTE	FY 2012 Technical ATB's	FTE	FY 2012 Base	FTE	FY 2012 Program Changes	FTE	FY 2012 Estimate
Congressionally Directed Projects		3,809	41		(3,850)							0				
Administrative Efficiency Initiative												0		(1,856)		(1,856)
Total, NESS - ORF	199,165	197,061	2,104	(269)	(88,675)	0	1,205	1,132	0	0	409	112,827	0	5,063	409	117,890
Other NESS Accounts																
Total, NESS - PAC	1,199,357	1,199,357	0	0	(22,312)	0	0	0	(4)	(810)	149	1,176,235	0	721,301	149	1,897,536
Total, NESS - Other	0															
GRAND TOTAL NESS	1,398,522	1,396,418	2,104	(269)	(110,987)	0	1,205	1,132	(4)	(810)	558	1,289,062	0	726,364	558	2,015,426

PROGRAM SUPPORT
(\$ in Thousands)

FY 2012 PROPOSED OPERATING PLAN	FY 2010 ENACTED (Conference)	FY 2011 Annualized Continuing Resolution	Other Adj	FTE	Climate Reorg	FTE	FY 2011 Calculated ATBs (w/o pay raise)	FY 2012 Calculated ATBs (w/o pay raise)	FTE	FY 2012 Technical ATB's	FTE	FY 2012 Base	FTE	FY 2012 Program Changes	FTE	FY 2012 Estimate
Corporate Services																
Under Secretary and Associate Offices																
Under Secretary and Associate Offices Base	28,438	28,138	300				329	88	(65)		154	28,855		65	154	28,920
Subtotal, Under Secretary and Associate Offices	28,438	28,138	300	0	0	0	329	88	(65)	0	154	28,855	0	65	154	28,920
NOAA Wide Corporate Services & Agency Management																
NOAA Wide Corporate Services & Agency Management Base	115,561	114,341	1,220	11	2,622	1	2,409	291	(35)	810	767	121,693	5	6,253	772	127,946
DOC Accounting System	10,171	10,064	107				148	206	39		39	10,525		5,000	39	15,525
Payment to the DOC Working Capital Fund	41,944	41,501	443				3,975	(52)			0	45,867		(1,389)	0	44,478
Subtotal, NOAA Wide Corporate Svcs & Agency Mgmt	167,676	165,906	1,770	11	2,622	1	6,532	445	4	810	806	178,085	5	9,864	811	187,949
Office of Chief Information Officer																
IT Security	9,089	8,993	96				32	211			0	9,332	8	9,100	8	18,432
Subtotal, Office of Chief Information Officer	9,089	8,993	96	0	0	0	32	211	0	0	0	9,332	8	9,100	8	18,432
Total, Corporate Services	205,203	203,037	2,166	11	2,622	1	6,893	744	(61)	810	960	216,272	13	19,029	973	235,301
NOAA Education Program																
Education Program / Initiative	2,000	1,979	21						(10)	(1,287)	0	713		(713)	0	0
JASON Education and Outreach	8,300		0								0	0		0	0	0
BWET California	2,500		0								0	0		0	0	0
BWET Regional Programs	7,200	7,124	76								0	7,200		(7,200)	0	0
Educ Partnership Prog/Minority Serving Institutions (EPPMSI)	14,323	14,172	151							(14,323)	0	0		0	0	0
Chesapeake Bay Interpretive Buoys	500		0								0	0		0	0	0
Narragansett Bay Marine Education (Save the Bay)	1,000		0								0	0		0	0	0
Training Next Generation Weather Forecasters - San Jose State Univ.	180		0								0	0		0	0	0
Competitive Educational Grants and Programs	12,000	11,873	127				77	110	21	15,610	21	27,797		(6,957)	21	20,840
GLOBE	3,000	2,968	32								0	3,000		(3,000)	0	0
Hawaii Education Program, HI	1,750		0								0	0		0	0	0
Coastal Environmental Education Outreach	500		0								0	0		0	0	0
Chesapeake Bay Environmental Center	250		0								0	0		0	0	0
Great Lakes Water Project	250		0								0	0		0	0	0
Total, NOAA Education Program	53,753	38,116	407	0	0	0	77	110	11	0	21	38,710	0	(17,870)	21	20,840
Facilities																
NOAA Facilities Management & Construction and Safety	30,346	30,025	321			1	243	416	41		46	31,005	1	10,758	47	41,763
Subtotal, NOAA Fac Mgmt, Const& Maint	30,346	30,025	321	0	0	1	243	416	41	0	46	31,005	1	10,758	47	41,763
Total, Facilities	30,346	30,025	321	0	0	1	243	416	41	0	46	31,005	1	10,758	47	41,763
Congressionally Directed Projects - Program Support		15,069	161									15,230		(15,230)		0
Administrative Efficiency Initiative												0		(3,274)		(3,274)
Total, Program Support - ORF	289,302	286,247	3,055	11	2,622	2	7,213	1,270	(9)	810	1,027	301,217	14	(6,587)	1,041	294,630
Total, Program Support - PAC	0	0	0	0	0	0	0	0	0	0	0	0	0	900	0	900
Total, Program Support - ORF and PAC	289,302	286,247	3,055	11	2,622	2	7,213	1,270	(9)	810	1,027	301,217	14	(5,687)	1,041	295,530

PROGRAM SUPPORT
(\$ in Thousands)

FY 2012 PROPOSED OPERATING PLAN	FY 2010 ENACTED (Conference)	FY 2011 Annualized Continuing Resolution	Other Adj	FTE	Climate Reorg	FTE	FY 2011 Calculated ATBs (w/o pay raise)	FY 2012 Calculated ATBs (w/o pay raise)	FTE	FY 2012 Technical ATB's	FTE	FY 2012 Base	FTE	FY 2012 Program Changes	FTE	FY 2012 Estimate
Marine Operations & Maintenance																
Marine Services																
Data Acquisition	120,125	118,856	1,269			5	5,833	6,011			923	131,969	5	192	928	132,161
Subtotal, Marine Operations & Maintenance	120,125	118,856	1,269	0	0	5	5,833	6,011	0	0	923	131,969	5	192	928	132,161
Fleet Planning and Maintenance																
Fleet Planning and Maintenance	17,034	16,854	180				165	271			3	17,470		9,565	3	27,035
Subtotal, Fleet Planning and Maintenance	17,034	16,854	180	0	0	0	165	271	0	0	3	17,470	0	9,565	3	27,035
Total, Marine Operations & Maintenance	137,159	135,710	1,449	0	0	5	5,998	6,282	0	0	926	149,439	5	9,757	931	159,196
Aviation Operations																
Aircraft Services	29,509	29,197	312				666	345			104	30,520		(1,162)	104	29,358
Total, Aviation Operations	29,509	29,197	312	0	0	0	666	345	0	0	104	30,520	0	(1,162)	104	29,358
Administrative Efficiency Initiative																
Total, OMAO - ORF	166,668	164,907	1,761	0	0	5	6,664	6,627	0	0	1,030	179,959	5	5,069	1,035	185,028
Total, OMAO - PAC	2,000	2,000	0	0	0	0	0	0	0	0	5	2,000	0	12,026	5	14,026
Total, OMAO - Other	27,938	30,091	0	0	0	0	0	0	0	114	0	30,205	0	0	0	30,205
Total OMAO - ORF, PAC and Other	196,606	196,998	1,761	0	0	5	6,664	6,627	0	114	1,035	212,164	5	17,095	1,040	229,259
Total, Program Support and OMAO - ORF	455,970	451,154	4,816	11	2,622	7	13,877	7,897	(9)	810	2,057	481,176	19	(1,518)	2,076	479,658
Other Program Support and OMAO Accounts																
Total, Program Support - PAC	2,000	2,000	0	0	0	0	0	0	0	0	5	2,000	0	12,926	5	14,926
Total, Program Support - Other	27,938	30,091	0	0	0	0	0	0	0	114	0	30,205	0	0	0	30,205
GRAND TOTAL PS	485,908	483,245	4,816	11	2,622	7	13,877	7,897	(9)	924	2,062	513,381	19	11,408	2,081	524,789

ORF SUMMARY
LINE OFFICE DIRECT OBLIGATIONS
(\$ in Thousands)

FY 2012 PROPOSED OPERATING PLAN	FY 2010 ENACTED (Conference)	FY 2011 Annualized Continuing Resolution	Other Adj	FTE	Climate Reorg	FTE	FY 2011 Calculated ATBs (w/o pay raise)	FY 2012 Calculated ATBs (w/o pay raise)	FTE	FY 2012 Technical ATB's	FTE	FY 2012 Base	FTE	FY 2012 Program Changes	FTE	FY 2012 Estimate
National Ocean Service	522,220	516,705	5,515	0	0	1	3,276	4,109	0	0	1,230	529,605	12	(18,386)	1,242	511,219
National Marine Fisheries Service	904,539	894,980	9,559	0	0	42	11,639	8,296	0	(1,500)	2,860	922,974	32	(12,562)	2,892	910,412
Office of Oceanic and Atmospheric Research	438,766	434,129	4,637	(276)	(215,520)	1	1,456	1,312	0	1,500	469	227,514	3	(15,501)	472	212,013
Climate Service	0	0	0	581	312,803	2	1,010	3,086	0	0	583	316,899	27	4,928	610	321,827
National Weather Service	892,118	882,692	9,426	(47)	(11,230)	1	9,289	7,475	2	3,504	4,569	901,156	4	(4,368)	4,573	896,788
National Environmental Satellite Service	199,165	197,061	2,104	(269)	(88,675)	0	1,205	1,132	0	0	409	112,827	0	5,063	409	117,890
Program Support	455,970	451,154	4,816	11	2,622	7	13,877	7,897	(9)	810	2,057	481,176	19	(1,518)	2,076	479,658
SUBTOTAL LO DIRECT OBLIGATIONS	3,412,778	3,376,721	36,057	0	0	54	41,752	33,307	(7)	4,314	12,177	3,492,151	97	(42,344)	12,274	3,449,807

ORF ADJUSTMENTS
(\$ in Thousands)

FY 2012 PROPOSED OPERATING PLAN	FY 2010 ENACTED (Conference)	FY 2011 Annualized Continuing Resolution	Other Adj	FTE	Climate Reorg	FTE	FY 2011 Calculated ATBs (w/o pay raise)	FY 2012 Calculated ATBs (w/o pay raise)	FTE	FY 2012 Technical ATB's	FTE	FY 2012 Base	FTE	FY 2012 Program Changes	FTE	FY 2012 Estimate
SUBTOTAL LO DIRECT OBLIGATIONS	3,412,778	3,376,721	36,057	0	0	54	41,752	33,307	(7)	4,314	12,177	3,492,151	97	(42,344)	12,274	3,449,807
FINANCING																
Cash Refunds/Prior Year Recoveries	0	0										0				0
De-Obligations	0	0								(6,000)		(6,000)		0		(6,000)
Unobligated Balance, EOY	0	0										0				0
Unobligated Balance, Expiring	0	0										0				0
Unobligated Balance Adj SOY (start of year)	0	0										0				0
Transfer of Unobligated P&D Balance	0	(312)								312		0				0
Total ORF Financing	0	(312)	0	0	0	0	0	0	0	(5,688)	0	(6,000)	0	0	0	(6,000)
SUBTOTAL BUDGET AUTHORITY	3,412,778	3,376,409	36,057	0	0	54	41,752	33,307	(7)	(1,374)	12,177	3,486,151	97	(42,344)	12,274	3,443,807
TRANSFERS																
Transfer from ORF to PAC	0	0										0				0
Transfer from PAC to ORF	0	0										0				0
Transfer from FFPA	0	0										0				0
Transfer from P&D to ORF	(104,600)	(68,231)								2,031	0	(66,200)				(66,200)
Transfer from CZMF to ORF	(3,000)	(3,000)								0		(3,000)		3,000		0
Transfer from ORF to Pacific Salmon	0	0										0				0
Total ORF Transfers	(107,600)	(71,231)	0	0	0	0	0	0	0	2,031	0	(69,200)	0	3,000	0	(66,200)
SUBTOTAL APPROPRIATION	3,305,178	3,305,178	36,057	0	0	54	41,752	33,307	(7)	657	12,177	3,416,951	97	(39,344)	12,274	3,377,607

PROCUREMENT, ACQUISITION, and CONSTRUCTION
(\$ in Thousands)

FY 2012 PROPOSED OPERATING PLAN Procurement, Acquisition and Construction	FY 2010 ENACTED (Conference)	FY 2011 Annualized Continuing Resolution	Other Adj	FTE	Climate Reorg	FTE	FY 2011 Calculated ATBs (w/o pay raise)	FY 2012 Calculated ATBs (w/o pay raise)	FTE	FY 2012 Technical ATB's	FTE	FY 2012 Base	FTE	FY 2012 Program Changes	FTE	FY 2012 Estimate
NOS																
CELCP Acquisition																
Coastal and Estuarine Land Conservation Program	20,000	20,000									1	20,000		5,000	1	25,000
Subtotal, NOS Acquisition	20,000	20,000	0	0	0	0	0	0	0	0	1	20,000	0	5,000	1	25,000
NERRS Construction:																
National Estuarine Rsrch Reserve Construction (NERRS)	3,890	3,890									0	3,890		(2,200)	0	1,690
Great Bay Partnership, NH	3,000	0									0	0			0	0
Subtotal, NERRS Construction	6,890	3,890	0	0	0	0	0	0	0	0	0	3,890	0	(2,200)	0	1,690
Marine Sanctuaries Construction:																
Marine Sanctuaries Base (Nancy Foster Scholarship 1% of base)	13,000	13,000									0	13,000		(7,505)	0	5,495
Thunder Bay NMS Exhibit	1,000	0									0	0			0	0
Subtotal, Marine Sanctuary Construction	14,000	13,000	0	0	0	0	0	0	0	0	0	13,000	0	(7,505)	0	5,495
Subtotal, NOS Construction	20,890	16,890	0	0	0	0	0	0	0	0	0	16,890	0	(9,705)	0	7,185
Congressionally Directed Projects		4,000									0	4,000		(4,000)		0
Administrative Efficiency Initiative														(451)		(451)
Total NOS - PAC	40,890	40,890	0	0	0	0	0	0	0	0	1	40,890	0	(9,156)	1	31,734
NMFS																
Total, NMFS - PAC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OAR																
Systems Acquisition																
Research Supercomputing/ CCRI	10,379	10,379			(10,379)						0	0		0	0	0
Subtotal, OAR Systems Acquisition	10,379	10,379	0	0	(10,379)	0	0	0	0	0	0	0	0	0	0	0
Total, OAR - PAC	10,379	10,379	0	0	(10,379)	0	0	0	0	0	0	0	0	0	0	0
CS																
Climate Research																
Research Super-computing	0	0			10,379						0	10,379		0	0	10,379
Subtotal, CS Climate Research	0	0	0	0	10,379	0	0	0	0	0	0	10,379	0	0	0	10,379
Observations and Monitoring																
Regional Historical Climatology Network Modernization	0	0			3,734						0	3,734		(34)	0	3,700
EOS & Advanced Polar Data Processing, Distribution, & Archiving Systems	0	0			990						0	990		0	0	990
Data Center Modernization	0	0			2,846						0	2,846		0	0	2,846
CLASS	0	0			18,476						0	18,476		(12,000)	0	6,476
Subtotal, CS Observations and Monitoring	0	0	0	0	26,046	0	0	0	0	0	0	26,046	0	(12,034)	0	14,012
Total, CS - PAC	0	0	0	0	36,425	0	0	0	0	0	0	36,425	0	(12,034)	0	24,391

PROCUREMENT, ACQUISITION, and CONSTRUCTION
(\$ in Thousands)

FY 2012 PROPOSED OPERATING PLAN Procurement, Acquisition and Construction	FY 2010 ENACTED (Conference)	FY 2011 Annualized Continuing Resolution	Other Adj	FTE	Climate Reorg	FTE	FY 2011 Calculated ATBs (w/o pay raise)	FY 2012 Calculated ATBs (w/o pay raise)	FTE	FY 2012 Technical ATB's	FTE	FY 2012 Base	FTE	FY 2012 Program Changes	FTE	FY 2012 Estimate
NWS																
Systems Acquisition																
ASOS	1,635	1,635									9	1,635		0	9	1,635
AWIPS	24,000	24,000									15	24,000		364	15	24,364
NEXRAD	7,976	7,976									5	7,976		(2,157)	5	5,819
NWSTG Legacy Replacement	1,195	1,195									0	1,195		0	0	1,195
Radiosonde Network Replacement	4,014	4,014									0	4,014		0	0	4,014
Weather and Climate Supercomputing	29,169	29,169									0	29,169		11,000	0	40,169
Cooperative Observer Network Modernization (NERON)	3,734	3,734			(3,734)				(2)		0	0		0	0	0
Complete and Sustain NOAA Weather Radio	11,000	11,000									0	11,000		(5,406)	0	5,594
NOAA Profiler Conversion	7,500	7,500									0	7,500		(2,020)	0	5,480
Subtotal, NWS Systems Acquisition	90,223	90,223	0	0	(3,734)	0	0	0	(2)	0	29	86,489	0	1,781	29	88,270
Construction																
WFO Construction	3,504	3,504								(3,504)	0	0		3,150	0	3,150
Cooperative Institute and Research Center for Southeast Weather, AL	14,000	0									0	0		0	0	0
Subtotal, NWS Construction	17,504	3,504	0	0	0	0	0	0	0	(3,504)	0	0	0	3,150	0	3,150
Congressionally Directed Projects		14,000									0	14,000		(14,000)		0
Administrative Efficiency Initiative														(230)		(230)
Total, NWS - PAC	107,727	107,727	0	0	(3,734)	0	0	0	(2)	(3,504)	29	100,489	0	(9,299)	29	91,190
NESS																
Systems Acquisition																
NOAA Satellite and Climate Sensors	0	0									0	0		0		0
Geostationary Systems - N	57,601	57,601			(2,846)				(4)	(810)	20	53,945		(19,978)	20	33,967
Geostationary Systems - R	667,500	667,500									46	667,500		(50,110)	46	617,390
Polar Orbiting Systems - POES	43,135	43,135									22	43,135		(8,319)	22	34,816
JASON-3	20,000	20,000									0	20,000		33,000	0	53,000
Joint Polar Satellite System (formerly NPOESS)	382,200	382,200									61	382,200		687,800	61	1,070,000
GCOM	0	0									0	0		0	0	0
DSCOV	0	0									0	0		47,300	0	47,300
Cosmic 2	0	0									0	0		11,300	0	11,300
EOS & Advanced Polar Data Processing, Distribution & Archiving Sys	990	990			(990)						0	0		0	0	0
CIP - single point of failure	2,772	2,772									0	2,772		0	0	2,772
Comprehensive Large Array Data Stewardship Sys (CLASS)	18,476	18,476			(18,476)						0	0		0	0	0
NPOESS Preparatory Data Exploitation	4,455	4,455									0	4,455		0	0	4,455
Restoration of Climate Sensors	0	0									0	0		30,400	0	30,400
Subtotal, NESS Systems Acquisition	1,197,129	1,197,129	0	0	(22,312)	0	0	0	(4)	(810)	149	1,174,007	0	731,393	149	1,905,400

PROCUREMENT, ACQUISITION, and CONSTRUCTION
(\$ in Thousands)

FY 2012 PROPOSED OPERATING PLAN Procurement, Acquisition and Construction	FY 2010 ENACTED (Conference)	FY 2011 Annualized Continuing Resolution	Other Adj	FTE	Climate Reorg	FTE	FY 2011 Calculated ATBs (w/o pay raise)	FY 2012 Calculated ATBs (w/o pay raise)	FTE	FY 2012 Technical ATB's	FTE	FY 2012 Base	FTE	FY 2012 Program Changes	FTE	FY 2012 Estimate
Construction																
Satellite CDA Facility	2,228	2,228									0	2,228		0	0	2,228
Subtotal, NESS Construction	2,228	2,228	0	0	0	0	0	0	0	0	0	2,228	0	0	0	2,228
Administrative Efficiency Initiative																
														(10,092)		(10,092)
Total, NESDIS - PAC	1,199,357	1,199,357	0	0	(22,312)	0	0	0	(4)	(810)	149	1,176,235	0	721,301	149	1,897,536
Program Support																
Construction																
NOAA Construction	0	0									0	0		900	0	900
Subtotal, Construction	0	0	0	0	0	0	0	0	0	0	0	0	0	900	0	900
Total, Program Support - PAC	0	0	0	0	0	0	0	0	0	0	0	0	0	900	0	900
OMAO																
OMAO - Fleet Replacement																
Temporary Berthing	1,000	1,000									0	1,000		(1,000)	0	0
Fleet Capital Improvements & Tech Infusion (Vessel Equip/Tech Refresh)	1,000	1,000									0	1,000		11,626	0	12,626
New Vessel Construction	0										5	0		1,400	5	1,400
Subtotal, OMAO Fleet Replacement	2,000	2,000	0	0	0	0	0	0	0	0	5	2,000	0	12,026	5	14,026
Total, OMAO - PAC	2,000	2,000	0	0	0	0	0	0	0	0	5	2,000	0	12,026	5	14,026
GRAND TOTAL PAC	1,360,353	1,360,353	0	0	0	0	0	0	(6)	(4,314)	184	1,356,039	0	703,738	184	2,059,777

PAC ADJUSTMENTS
(\$ in Thousands)

FY 2012 PROPOSED OPERATING PLAN Procurement, Acquisition and Construction	FY 2010 ENACTED (Conference)	FY 2011 Annualized Continuing Resolution	Other Adj	FTE	Climate Reorg	FTE	FY 2011 Calculated ATBs (w/o pay raise)	FY 2012 Calculated ATBs (w/o pay raise)	FTE	FY 2012 Technical ATB's	FTE	FY 2012 Base	FTE	FY 2012 Program Changes	FTE	FY 2012 Estimate
SUBTOTAL DIRECT OBLIGATIONS	1,360,353	1,360,353	0	0	0	0	0	0	(6)	(4,314)	184	1,356,039	0	703,738	184	2,059,777
FINANCING																
Cash Refunds/Recoveries from Prior Year De-Obligations	(2,000)	(2,000)								(5,000)		(7,000)				(7,000)
Unobligated balance, Expiring end of year																
Unobligated Balance Adj. SOY (start of year)																
Unobligated Balance End of Year																
Transfer to ORF																
Total PAC Financing	(2,000)	(2,000)	0	0	0	0	0	0	0	(5,000)		(7,000)		0	0	(7,000)
SUBTOTAL BUDGET AUTHORITY	1,358,353	1,358,353	0	0	0	0	0	0	(6)	(9,314)	184	1,349,039	0	703,738	184	2,052,777
TRANSFERS/RESCISSIONS																
Transfer from ORF to PAC																
Transfer from PAC to ORF																
Unobligated balance, Rescission																
Total PAC Transfers/Rescissions	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0
SUBTOTAL APPROPRIATION	1,358,353	1,358,353	0	0	0	0	0	0	(6)	(9,314)	184	1,349,039	0	703,738	184	2,052,777

GRAND TOTAL SUMMARY
Discretionary Appropriations
(\$ in Thousands)

FY 2012 PROPOSED OPERATING PLAN ORF, PAC, and Other Discretionary Appropriations	FY 2010 ENACTED (Conference)	FY 2011 Annualized Continuing Resolution	Other Adj	FTE	Climate Reorg	FTE	FY 2011 Calculated ATBs (w/o pay raise)	FY 2012 Calculated ATBs (w/o pay raise)	FTE	FY 2012 Technical ATB's	FTE	FY 2012 Base	FTE	FY 2012 Program Changes	FTE	FY 2012 Estimate
Operations, Research and Facilities	3,305,178	3,305,178	36,057	0	0	54	41,752	33,307	(7)	657	12,177	3,416,951	97	(39,344)	12,274	3,377,607
Procurement, Acquisition and Construction	1,358,353	1,358,353	0	0	0	0	0	0	(6)	(9,314)	184	1,349,039	0	703,738	184	2,052,777
Coastal Zone Management Fund	3,000	3,000		0	0	0	0	0	0	0	0	3,000	0	(3,000)	0	0
Fisherman's Contingency Fund	0	0		0	0	0	0	0	0	0	1	0	0	350	1	350
Foreign Fishing Observer Fund	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0
Fisheries Financing Program	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0
Pacific Coastal Salmon Fund	80,000	80,000		0	0	0	0	0	0	0	0	80,000	0	(15,000)	0	65,000
Marine Mammal Unusual Mortality Event Fund	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0
Medicare Eligible Retiree Health Care Fund	1,822	1,822		0	0	0	0	0	0	114	0	1,936	0	0	0	1,936
GRAND TOTAL DISCRETIONARY APPROPRIATION	4,748,353	4,748,353	36,057	0	0	54	41,752	33,307	(13)	(8,543)	12,362	4,850,926	97	646,744	12,459	5,497,670

OTHER ACCOUNTS (DISCRETIONARY)
(\$ in Thousands)

FY 2011 PROPOSED OPERATING PLAN	FY 2010 ENACTED (Conference)	FY 2011 Annualized Continuing Resolution	Other Adj	FTE	Climate Reorg	FTE	FY 2011 Calculated ATBs (w/o pay raise)	FY 2012 Calculated ATBs (w/o pay raise)	FTE	FY 2012 Technical ATB's	FTE	FY 2012 Base	FTE	FY 2012 Program Changes	FTE	FY 2012 Estimate
NOS																
Coastal Zone Management Fund Obligations	0	0									0	0			0	0
Coastal Zone Management Fund Budget Authority	0	0									0	0			0	0
Coastal Zone Management Fund Appropriation	3,000	3,000									0	3,000		(3,000)	0	0
Coastal Impact Assistance Fund Obligations	0	0									0	0			0	0
Coastal Impact Assistance Fund Budget Authority	0	0									0	0			0	0
Coastal Impact Assistance Fund Appropriation	0	0									0	0			0	0
Subtotal, NOS Oth Disc Direct Obligation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal, NOS Oth Disc Budget Authority	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal, NOS Oth Disc Appropriation	3,000	3,000	0	0	0	0	0	0	0	0	0	3,000	0	(3,000)	0	0
NMFS																
Fishermen's Contingency Fund Obligations	0	10								(10)	1	0		350	1	350
Fishermen's Contingency Fund Budget Authority	0	0									1	0		350	1	350
Fishermen's Contingency Fund Appropriations	0	0									1	0		350	1	350
Foreign Fishing Observer Fund Obligations	0	0									0	0		0	0	0
Foreign Fishing Observer Fund Budget Authority	0	0									0	0		(350)	0	(350)
Foreign Fishing Observer Fund Appropriation	0	0									0	0		0	0	0
Fisheries Finance Program Account Obligations	0	0									0	0			0	0
Fisheries Finance Program Account Budget Authority	0	0									0	0			0	0
Fisheries Finance Program Account Appropriation	0	0									0	0			0	0
Promote and Develop Fisheries Obligations	0	0									0	0			0	0
Promote and Develop Fisheries Budget Authority	(104,600)	(68,231)								2,031	0	(66,200)			0	(66,200)
Promote and Develop Fisheries Appropriation	0	0									0	0			0	0
Pacific Coastal Salmon Fund Obligations	80,000	80,000									0	80,000		(15,000)	0	65,000
Pacific Coastal Salmon Fund Budget Authority	80,000	80,000									0	80,000		(15,000)	0	65,000
Pacific Coastal Salmon Fund Appropriation	80,000	80,000									0	80,000		(15,000)	0	65,000
Marine Mammal Unusual Mortality Event Fund Obligations	0	206								(6)	0	200			0	200
Marine Mammal Unusual Mortality Event Fund Budget Authority	0	0									0	0			0	0
Marine Mammal Unusual Mortality Event Fund Appropriations	0	0									0	0			0	0
Subtotal, NMFS Oth Disc Direct Obligation	80,000	80,216	0	0	0	0	0	0	0	(16)	1	80,200	0	(14,650)	1	65,550
Subtotal, NMFS Oth Disc Budget Authority	(24,600)	11,769	0	0	0	0	0	0	0	2,031	1	13,800	0	(15,000)	1	(1,200)
Subtotal, NMFS Oth Disc Appropriation	80,000	80,000	0	0	0	0	0	0	0	0	1	80,000	0	(14,650)	1	65,350

OTHER ACCOUNTS (DISCRETIONARY)
(\$ in Thousands)

FY 2011 PROPOSED OPERATING PLAN	FY 2010 ENACTED (Conference)	FY 2011 Annualized Continuing Resolution	Other Adj	FTE	Climate Reorg	FTE	FY 2011 Calculated ATBs (w/o pay raise)	FY 2012 Calculated ATBs (w/o pay raise)	FTE	FY 2012 Technical ATB's	FTE	FY 2012 Base	FTE	FY 2012 Program Changes	FTE	FY 2012 Estimate
OMAO																
Medicare Eligible Retiree Healthcare Fund Acct Obligations	1,822	1,822								114	0	1,936		0	0	1,936
Medicare Eligible Retiree Healthcare Fund Acct Budget Authority	1,822	1,822								114	0	1,936		0	0	1,936
Medicare Eligible Retiree Healthcare Fund Acct Appropriations	1,822	1,822								114	0	1,936		0	0	1,936
Subtotal, OMAO Oth Disc Direct Obligations	1,822	1,822	0	0	0	0	0	0	0	114	0	1,936	0	0	0	1,936
Subtotal, OMAO Oth Disc Budget Authority	1,822	1,822	0	0	0	0	0	0	0	114	0	1,936	0	0	0	1,936
Subtotal, OMAO Oth Disc Appropriation	1,822	1,822	0	0	0	0	0	0	0	114	0	1,936	0	0	0	1,936
TOTAL, OTHER DISC DIRECT OBLIGATIONS	81,822	82,038	0	0	0	0	0	0	0	98	1	82,136	0	(14,650)	1	67,486
TOTAL, OTHER DISC BUDGET AUTHORITY	(22,778)	13,591	0	0	0	0	0	0	0	2,145	1	15,736	0	(15,000)	1	736
TOTAL, OTHER DISC APPROPRIATION	84,822	84,822	0	0	0	0	0	0	0	114	1	84,936	0	(17,650)	1	67,286

SUMMARY OF DISCRETIONARY RESOURCES
(\$ in Thousands)

FY 2011 PROPOSED OPERATING PLAN	FY 2010 ENACTED (Conference)	FY 2011 Annualized Continuing Resolution	Other Adj	FTE	Climate Reorg	FTE	FY 2011 Calculated ATBs (w/o pay raise)	FY 2012 Calculated ATBs (w/o pay raise)	FTE	FY 2012 Technical ATB's	FTE	FY 2012 Base	FTE	FY 2012 Program Changes	FTE	FY 2012 Estimate
Discretionary Direct Obligations																
ORF Direct Obligations	3,412,778	3,376,721	36,057	0	0	54	41,752	33,307	(7)	4,314	12,177	3,492,151	97	(42,344)	12,274	3,449,807
PAC Direct Obligations	1,360,353	1,360,353	0	0	0	0	0	0	(6)	(4,314)	184	1,356,039	0	703,738	184	2,059,777
OTHER Direct Obligations	81,822	82,038	0	0	0	0	0	0	0	98	1	82,136	0	(14,650)	1	67,486
TOTAL Discretionary Direct Obligations	4,854,953	4,819,112	36,057	0	0	54	41,752	33,307	(13)	98	12,362	4,930,326	97	646,744	12,459	5,577,070
Discretionary Budget Authority																
ORF Budget Authority	3,412,778	3,376,409	36,057	0	0	54	41,752	33,307	(7)	(1,374)	12,177	3,486,151	97	(42,344)	12,274	3,443,807
PAC Budget Authority	1,358,353	1,358,353	0	0	0	0	0	0	(6)	(9,314)	184	1,349,039	0	703,738	184	2,052,777
OTHER Budget Authority	(22,778)	13,591	0	0	0	0	0	0	0	2,145	1	15,736	0	(15,000)	1	736
TOTAL Discretionary Budget Authority	4,748,353	4,748,353	36,057	0	0	54	41,752	33,307	(13)	(8,543)	12,362	4,850,926	97	646,394	12,459	5,497,320
Discretionary Appropriations																
ORF Appropriations	3,305,178	3,305,178	36,057	0	0	54	41,752	33,307	(7)	657	12,177	3,416,951	97	(39,344)	12,274	3,377,607
PAC Appropriations	1,358,353	1,358,353	0	0	0	0	0	0	(6)	(9,314)	184	1,349,039	0	703,738	184	2,052,777
OTHER Appropriations	84,822	84,822	0	0	0	0	0	0	0	114	1	84,936	0	(17,650)	1	67,286
TOTAL Discretionary Appropriation	4,748,353	4,748,353	36,057	0	0	54	41,752	33,307	(13)	(8,543)	12,362	4,850,926	97	646,744	12,459	5,497,670

OTHER ACCOUNTS (MANDATORY)
(\$ in Thousands)

FY 2012 PROPOSED OPERATING PLAN	FY 2010 ENACTED (Conference)	FY 2011 Annualized Continuing Resolution	Other Adj	FTE	Climate Reorg	FTE	FY 2011 Calculated ATBs (w/o pay raise)	FY 2012 Calculated ATBs (w/o pay raise)	FTE	FY 2012 Technical ATB's	FTE	FY 2012 Base	FTE	FY 2012 Program Changes	FTE	FY 2012 Estimate
NOS																
Coastal Zone Management Fund Obligations	0	0								0	0	0			0	0
Coastal Zone Management Fund Budget Authority	(1,500)	(1,500)								0	0	(1,500)			0	(1,500)
Coastal Zone Management Fund Appropriation	(3,000)	(3,000)								0	0	(3,000)		3,000	0	0
Damage Assessment & Restoration Revolving Fund Obligations	15,600	55,326								(39,726)	16	15,600			16	15,600
Damage Assessment & Restoration Revolving Fund Budget Authority	3,000	3,300								(300)	16	3,000			16	3,000
Damage Assessment & Restoration Revolving Fund Appropriation	0	0								0	16	0			16	0
Subtotal, NOS Oth Mand Direct Obligations	15,600	55,326	0	0	0	0	0	0	0	(39,726)	16	15,600	0	0	16	15,600
Subtotal, NOS Oth Mand Budget Authority	1,500	1,800	0	0	0	0	0	0	0	(300)	16	1,500	0	0	16	1,500
Subtotal, NOS Oth Mand Appropriation	(3,000)	(3,000)	0	0	0	0	0	0	0	0	16	(3,000)	0	3,000	16	0
NMFS																
Promote and Develop Fisheries Obligations	8,771	0								5,000	4	5,000			4	5,000
Promote and Develop Fisheries Budget Authority	113,371	68,231								2,969	4	71,200			4	71,200
Promote and Develop Fisheries Appropriation	0	0									4	0			4	0
Fisheries Finance Program Account Obligations	5,777	9,910								(9,910)	0	0			0	0
Fisheries Finance Program Account Budget Authority	5,777	9,910								(9,910)	0	0			0	0
Fisheries Finance Program Account Appropriation	5,777	9,910								(9,910)	0	0			0	0
Federal Ship Financing Obligations	260	0									0	0			0	0
Federal Ship Financing Budget Authority	(740)	0									0	0			0	0
Federal Ship Financing Appropriation	0	0									0	0			0	0
Environmental Improve & Restoration Fund Obligations	506	10,248								(8,781)	0	1,467			0	1,467
Environmental Improve & Restoration Fund Budget Authority	506	378								1,089	0	1,467			0	1,467
Environmental Improve & Restoration Fund Appropriation	506	378								1,089	0	1,467			0	1,467
Limited Access System Administration Fund Obligations	7,444	20,046								(10,371)	0	9,675			0	9,675
Limited Access System Administration Fund Budget Authority	7,444	8,576								1,099	0	9,675			0	9,675
Limited Access System Administration Fund Appropriation	7,444	8,576								1,099	0	9,675			0	9,675
Western Pacific Sustainable Fisheries Fund Obligations	884	2,000								1,000	0	1,000			0	1,000
Western Pacific Sustainable Fisheries Fund Budget Authority	0	1,000									0	1,000			0	1,000
Western Pacific Sustainable Fisheries Fund Appropriation	0	1,000									0	1,000			0	1,000
Subtotal, NMFS Oth Mand Direct Obligations	23,642	42,204	0	0	0	0	0	0	0	(23,062)	4	17,142	0	0	4	17,142
Subtotal, NMFS Oth Mand Budget Authority	126,358	88,095	0	0	0	0	0	0	0	(4,753)	4	83,342	0	0	4	83,342
Subtotal, NMFS Oth Mand Appropriation	13,727	19,864	0	0	0	0	0	0	0	(7,722)	4	12,142	0	0	4	12,142

OTHER ACCOUNTS (MANDATORY)
(\$ in Thousands)

FY 2012 PROPOSED OPERATING PLAN	FY 2010 ENACTED (Conference)	FY 2011 Annualized Continuing Resolution	Other Adj	FTE	Climate Reorg	FTE	FY 2011 Calculated ATBs (w/o pay raise)	FY 2012 Calculated ATBs (w/o pay raise)	FTE	FY 2012 Technical ATB's	FTE	FY 2012 Base	FTE	FY 2012 Program Changes	FTE	FY 2012 Estimate
OMAO																
NOAA Corp Commissioned Officers Retirement Obligations	26,116	28,269								0	0	28,269			0	28,269
NOAA Corp Commissioned Officers Retirement Budget Authority	26,116	28,269								0	0	28,269			0	28,269
NOAA Corp Commissioned Officers Retirement Budget Appropriation	26,116	28,269								0	0	28,269			0	28,269
Subtotal, OMAO Oth Mand Direct Obligations	26,116	28,269	0	0	0	0	0	0	0	0	0	28,269	0	0	0	28,269
Subtotal, OMAO Oth Mand Budget Authority	26,116	28,269	0	0	0	0	0	0	0	0	0	28,269	0	0	0	28,269
Subtotal, OMAO Oth Mand Appropriation	26,116	28,269	0	0	0	0	0	0	0	0	0	28,269	0	0	0	28,269
TOTAL, OTH MAND DIRECT OBLIGATIONS	65,358	125,799	0	0	0	0	0	0	0	(62,788)	20	61,011	0	0	20	61,011
TOTAL, OTH MAND BUDGET AUTHORITY	153,974	118,164	0	0	0	0	0	0	0	(5,053)	20	113,111	0	0	20	113,111
TOTAL, OTH MAND APPROPRIATION	36,843	45,133	0	0	0	0	0	0	0	(7,722)	20	37,411	0	3,000	20	40,411

OTHER ACCOUNTS (DISCRETIONARY REIMBURSABLE)
(\$ in Thousands)

FY 2012 PROPOSED OPERATING PLAN	FY 2010 ENACTED (Conference)	FY 2011 Annualized Continuing Resolution	Other Adj	FTE	Climate Reorg	FTE	FY 2011 Calculated ATBs (w/o pay raise)	FY 2012 Calculated ATBs (w/o pay raise)	FTE	FY 2012 Technical ATB's	FTE	FY 2012 Base	FTE	FY 2012 Program Changes	FTE	FY 2012 Estimate
<u>NOS</u>																
Sanctuaries Asset Forefeiture Fund Obligations	0	0								1,000	0	1,000			0	1,000
Sanctuaries Asset Forefeiture Fund Budget Authority	0	0								1,000	0	1,000			0	1,000
Sanctuaries Asset Forefeiture Fund Appropriations	0	0								1,000	0	1,000			0	1,000
<u>NMES</u>																
Fisheries Asset Forfeiture Fund Obligations	0	0								8,000	0	8,000			0	8,000
Fisheries Asset Forfeiture Fund Budget Authority	0	0								8,000	0	8,000			0	8,000
Fisheries Asset Forfeiture Fund Appropriations	0	0								5,000	0	5,000			0	5,000
TOTAL, OTH DISC REIMB DIRECT OBLIGATIONS	0	0	0	0	0	0	0	0	0	9,000	0	9,000	0	0	0	9,000
TOTAL, OTH DISC REIMB BUDGET AUTHORITY	0	0	0	0	0	0	0	0	0	9,000	0	9,000	0	0	0	9,000
TOTAL, OTH DISC REIMB APPROPRIATION	0	0	0	0	0	0	0	0	0	6,000	0	6,000	0	0	0	6,000

NOAA SUMMARY
(\$ in Thousands)

FY 2012 PROPOSED OPERATING PLAN	FY 2010 ENACTED (Conference)	FY 2011 Annualized Continuing Resolution	Other Adj	FTE	Climate Reorg	FTE	FY 2011 Calculated ATBs (w/o pay raise)	FY 2012 Calculated ATBs (w/o pay raise)	FTE	FY 2012 Technical ATB's	FTE	FY 2012 Base	FTE	FY 2012 Program Changes	FTE	FY 2012 Estimate
TOTAL Direct Obligations (Discretion & Mand)	4,920,311	4,944,911	36,057	0	0	54	41,752	33,307	(13)	(53,690)	12,382	5,000,337	97	646,744	12,479	5,647,081
TOTAL Budget Authority (Discretion & Mand)	4,902,327	4,866,517	36,057	0	0	54	41,752	33,307	(13)	(4,596)	12,382	4,973,037	97	646,394	12,479	5,619,431
TOTAL Appropriation (Discretion & Mand)	4,785,196	4,793,486	36,057	0	0	54	41,752	33,307	(13)	(10,265)	12,382	4,894,337	97	649,744	12,479	5,544,081
Reimbursable Financing	242,000	242,000	0	0	0	0	0	0		0	706	242,000		(3,000)	706	239,000
TOTAL OBLIGATIONS (Direct & Reimbursable)	5,162,311	5,186,911	36,057	0	0	54	41,752	33,307	(13)	(53,690)	13,088	5,242,337	97	643,744	13,185	5,886,081
Offsetting Receipts	(6,929)	(8,611)	0		0		0	0		0		0		0		(15,831)
TOTAL OBLIGATIONS (Direct, Reimb & Offsetting Receipts)	5,155,382	5,178,300	36,057	0	0	54	41,752	33,307	(13)	(53,690)	13,088	5,242,337	97	643,744	13,185	5,870,250

LINE OFFICE SUMMARY
(\$ in Thousands)

FY 2012 PROPOSED OPERATING PLAN	FY 2010 ENACTED (Conference)	FY 2011 Annualized Continuing Resolution	Other Adj	FTE	Climate Reorg	FTE	FY 2011 Calculated ATBs (w/o pay raise)	FY 2012 Calculated ATBs (w/o pay raise)	FTE	FY 2012 Technical ATB's	FTE	FY 2012 Base	FTE	FY 2012 Program Changes	FTE	FY 2012 Estimate
National Ocean Service																
ORF	522,220	516,705	5,515	0	0	1	3,276	4,109	0	0	1,230	529,605	12	(18,386)	1,242	511,219
PAC	40,890	40,890	0	0	0	0	0	0	0	0	1	40,890	0	(9,156)	1	31,734
OTHER	15,600	55,326	0	0	0	0	0	0	0	(38,726)	16	16,600	0	0	16	16,600
TOTAL, NOS	578,710	612,921	5,515	0	0	1	3,276	4,109	0	(38,726)	1,247	587,095	12	(27,542)	1,259	559,553
National Marine Fisheries Service																
ORF	904,539	894,980	9,559	0	0	42	11,639	8,296	0	(1,500)	2,860	922,974	32	(12,562)	2,892	910,412
PAC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	103,642	122,420	0	0	0	0	0	0	0	(15,078)	5	105,342	0	(14,650)	5	90,692
TOTAL, NMFS	1,008,181	1,017,400	9,559	0	0	42	11,639	8,296	0	(16,578)	2,865	1,028,316	32	(27,212)	2,897	1,001,104
Oceanic and Atmospheric Research																
ORF	438,766	434,129	4,637	(276)	(215,520)	1	1,456	1,312	0	1,500	469	227,514	3	(15,501)	472	212,013
PAC	10,379	10,379	0	0	(10,379)	0	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL, OAR	449,145	444,508	4,637	(276)	(225,899)	1	1,456	1,312	0	1,500	469	227,514	3	(15,501)	472	212,013
Climate Service																
ORF	0	0	0	581	312,803	2	1,010	3,086	0	0	583	316,899	27	4,928	610	321,827
PAC	0	0	0	0	36,425	0	0	0	0	0	0	36,425	0	(12,034)	0	24,391
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL, CS	0	0	0	581	349,228	2	1,010	3,086	0	0	583	353,324	27	(7,106)	610	346,218
National Weather Service																
ORF	892,118	882,692	9,426	(47)	(11,230)	1	9,289	7,475	2	3,504	4,569	901,156	4	(4,368)	4,573	896,788
PAC	107,727	107,727	0	0	(3,734)	0	0	0	(2)	(3,504)	29	100,489	0	(9,299)	29	91,190
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL, NWS	999,845	990,419	9,426	(47)	(14,964)	1	9,289	7,475	0	0	4,598	1,001,645	4	(13,667)	4,602	987,978
NESS																
ORF	199,165	197,061	2,104	(269)	(88,675)	0	1,205	1,132	0	0	409	112,827	0	5,063	409	117,890
PAC	1,199,357	1,199,357	0	0	(22,312)	0	0	0	(4)	(810)	149	1,176,235	0	721,301	149	1,897,536
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL, NESS	1,398,522	1,396,418	2,104	(269)	(110,987)	0	1,205	1,132	(4)	(810)	558	1,289,062	0	726,364	558	2,015,426
Program Support / Corporate Services																
ORF	205,203	203,037	2,166	11	2,622	1	6,893	744	(61)	810	960	216,272	13	19,029	973	235,301
PAC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL, PS / Corporate Services	205,203	203,037	2,166	11	2,622	1	6,893	744	(61)	810	960	216,272	13	19,029	973	235,301
Program Support / NOAA Education Program																
ORF	53,753	38,116	407	0	0	0	77	110	11	0	21	38,710	0	(17,870)	21	20,840
PAC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL, PS / NOAA Education Program	53,753	38,116	407	0	0	0	77	110	11	0	21	38,710	0	(17,870)	21	20,840

LINE OFFICE SUMMARY
(\$ in Thousands)

FY 2012 PROPOSED OPERATING PLAN	FY 2010 ENACTED (Conference)	FY 2011 Annualized Continuing Resolution	Other Adj	FTE	Climate Reorg	FTE	FY 2011 Calculated ATBs (w/o pay raise)	FY 2012 Calculated ATBs (w/o pay raise)	FTE	FY 2012 Technical ATB's	FTE	FY 2012 Base	FTE	FY 2012 Program Changes	FTE	FY 2012 Estimate
Program Support / Facilities																
ORF	30,346	30,025	321	0	0	1	243	416	41	0	46	31,005	1	10,758	47	41,763
PAC	0	0	0	0	0	0	0	0	0	0	0	0	0	900	0	900
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL, PS / Facilities	30,346	30,025	321	0	0	1	243	416	41	0	46	31,005	1	11,658	47	42,663
Program Support / Corp Srv, Edu, Fac																
ORF	289,302	286,247	3,055	11	2,622	2	7,213	1,270	(9)	810	1,027	301,217	14	(6,587)	1,041	294,630
PAC	0	0	0	0	0	0	0	0	0	0	0	0	0	900	0	900
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL, PS / Corp Srv, Edu, Fac	289,302	286,247	3,055	11	2,622	2	7,213	1,270	(9)	810	1,027	301,217	14	(5,687)	1,041	295,530
Program Support / OMAO																
ORF	166,668	164,907	1,761	0	0	5	6,664	6,627	0	0	1,030	179,959	5	5,069	1,035	185,028
PAC	2,000	2,000	0	0	0	0	0	0	0	5	2,000	0	0	12,026	5	14,026
OTHER	27,938	30,091	0	0	0	0	0	0	0	114	0	30,205	0	0	0	30,205
TOTAL, PS / OMAO	196,606	196,998	1,761	0	0	5	6,664	6,627	0	114	1,035	212,164	5	17,095	1,040	229,259
Total PS ORF	455,970	451,154	4,816	11	2,622	7	13,877	7,897	(9)	810	2,057	481,176	19	(1,518)	2,076	479,658
Total PS PAC	2,000	2,000	0	0	0	0	0	0	0	5	2,000	0	0	12,926	5	14,926
Total PS Other	27,938	30,091	0	0	0	0	0	0	0	114	0	30,205	0	0	0	30,205
TOTAL, PS	485,908	483,245	4,816	11	2,622	7	13,877	7,897	(9)	924	2,062	513,381	19	11,408	2,081	524,789
DIRECT OBLIGATIONS																
ORF	3,412,778	3,376,721	36,057	0	0	54	41,752	33,307	(7)	4,314	12,177	3,492,151	97	(42,344)	12,274	3,449,807
PAC	1,360,353	1,360,353	0	0	0	0	0	0	(6)	(4,314)	184	1,356,039	0	703,738	184	2,059,777
OTHER	147,180	207,837	0	0	0	0	0	0	0	(53,690)	21	152,147	0	(14,650)	21	137,497
TOTAL, DIRECT OBLIGATIONS	4,920,311	4,944,911	36,057	0	0	54	41,752	33,307	(13)	(53,690)	12,382	5,000,337	97	646,744	12,479	5,647,081
ORF Adjustments (Deobligations / Rescissions)	0	(312)	0	0	0	0	0	0	0	(5,688)	0	(6,000)	0	0	0	(6,000)
ORF Transfers	(107,600)	(71,231)	0	0	0	0	0	0	0	2,031	0	(69,200)	0	3,000	0	(66,200)
PAC Adjustments (Deobligations / Rescissions)	(2,000)	(2,000)	0	0	0	0	0	0	0	(5,000)	0	(7,000)	0	0	0	(7,000)
PAC Transfers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER Discretionary Adjustments	3,000	2,784	0	0	0	0	0	0	0	16	0	2,800	0	(3,000)	0	(200)
Mandatory Accounts Excluded	(65,358)	(125,799)	0	0	0	0	0	0	0	62,788	(20)	(61,011)	0	0	(20)	(61,011)
Discretionary Reimbursable Accounts Excluded	0	0	0	0	0	0	0	0	0	(9,000)	0	(9,000)	0	0	0	(9,000)
TOTAL, DISCRETIONARY APPROPRIATIONS	4,748,353	4,748,353	36,057	0	0	54	41,752	33,307	(13)	(8,543)	12,362	4,850,926	97	646,744	12,459	5,497,670

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar Amounts in Thousands)

	Positions	FTE	Approp.	Budget Authority	Direct Obligations
FY 2011 Annualized Continuing Resolution	12,772	12,130	3,305,178	3,376,409	3,422,976
Less: Carryover	0	0	0	0	(46,255)
Plus: 2011 and 2012 Adjustments to Base, Other Adjustments	6	47	111,773	109,742	115,430
FY 2012 Base	12,778	12,177	3,416,951	3,486,151	3,492,151
Administrative Savings (actual reduction)	0	0	(54,653)	(54,653)	(54,653)
Plus (or less): 2012 Program Changes	130	97	15,309	12,309	12,309
FY 2012 Estimate	12,908	12,274	3,377,607	3,443,807	3,449,807

Comparison by activity/subactivity		FY 2010 Actual		FY 2011 Currently Available		FY 2012 Base Program		FY 2012 Estimate		Increase/Decrease	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
National Ocean Service	Pos/BA	1,293	521,696	1,293	516,705	1,293	529,605	1,308	511,219	15	(18,386)
	FTE/OBL	1,234	519,553	1,229	519,578	1,230	529,605	1,242	511,219	12	(18,386)
National Marine Fisheries Service	Pos/BA	3,002	947,695	3,002	894,980	3,002	922,974	3,047	910,412	45	(12,562)
	FTE/OBL	2,830	942,883	2,818	923,997	2,860	922,974	2,892	910,412	32	(12,562)
Oceanic and Atmospheric Research	Pos/BA	784	438,327	784	434,129	485	227,514	489	212,013	4	(15,501)
	FTE/OBL	713	440,244	744	435,021	469	227,514	472	212,013	3	(15,501)
Climate Service	Pos/BA	0	0	0	0	621	316,899	657	321,827	36	4,928
	FTE/OBL	0	0	0	0	583	316,899	610	321,827	27	4,928

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
SUMMARY OF RESOURCE REQUIREMENTS
(Dollar Amounts in Thousands)

Comparison by activity/subactivity		FY 2010		FY 2011		FY 2012		FY 2012		Increase/ Decrease	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
National Weather Service	Pos/BA	4,845	891,226	4,845	882,692	4,797	901,156	4,802	896,788	5	(4,368)
	FTE/OBL	4,692	891,593	4,613	882,897	4,569	901,156	4,573	896,788	4	(4,368)
National Environmental Satellite Service	Pos/BA	712	198,966	712	197,061	429	112,827	429	117,890	0	5,063
	FTE/OBL	623	199,425	678	197,700	409	112,827	409	117,890	0	5,063
Program Support	Pos/BA	1,076	300,805	1,076	286,247	1,091	301,217	1,109	294,630	18	(6,587)
	FTE/OBL	935	290,347	1,023	298,404	1,027	301,217	1,041	294,630	14	(6,587)
Office of Marine Aviation & Ops	Pos/BA	1,060	166,501	1,060	164,907	1,060	179,959	1,067	185,028	7	5,069
	FTE/OBL	988	178,430	1,025	165,379	1,030	179,959	1,035	185,028	5	5,069
Less Deobligations/Other	Pos/BA	0	0	0	(312)	0	(6,000)	0	(6,000)	0	0
	FTE/OBL	0	0	0	0	0	0	0	0	0	0
Total	Pos/BA	12,772	3,465,216	12,772	3,376,409	12,778	3,486,151	12,908	3,443,807	130	(42,344)
	FTE/OBL	12,015	3,462,475	12,130	3,422,976	12,177	3,492,151	12,274	3,449,807	97	(42,344)

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
SUMMARY OF RESOURCE REQUIREMENTS
(Dollar Amounts in Thousands)

	FY 2010		FY 2011		FY 2012		FY 2012		Increase/ Decrease	
	Actual		Currently Available		Base Program		Estimate			
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	12,015	3,462,475	12,130	3,422,976	12,177	3,492,151	12,274	3,449,807	97	(42,344)
Total Obligations	12,015	3,462,475	12,130	3,422,976	12,177	3,492,151	12,274	3,449,807	97	(42,344)
Adjustments to Obligations:										
Recoveries	0	0	0	0	0	0	0	0	0	0
Cash Refunds/Prior Year Recoveries	0	(753)	0	0	0	0	0	0	0	0
Deobligations	0	(5,597)	0	0	0	(6,000)	0	(6,000)	0	0
Enacted Rescissions	0	0	0	0	0	0	0	0	0	0
Other Appropriations Realized	0	0	0	0	0	0	0	0	0	0
Unobligated Balance deferred	0	0	0	0	0	0	0	0	0	0
Unobligated Balance, not apportioned	0	0	0	0	0	0	0	0	0	0
Unobligated Balance, unavailable	0	0	0	0	0	0	0	0	0	0
Unobligated Balance, Expiring	0	1,570	0	0	0	0	0	0	0	0
Unobligated Balance Adj SOY	0	(38,734)	0	(46,255)	0	0	0	0	0	0
Unobligated balance, EOY	0	46,255	0	0	0	0	0	0	0	0
Unobligated balance, Trnsfr - PAC/USAID	0	0	0	(312)	0	0	0	0	0	0
Total Budget Authority	12,015	3,465,216	12,130	3,376,409	12,177	3,486,151	12,274	3,443,807	97	(42,344)
Financing from Transfers and Other:										
Transfer from P&D	0	(104,600)	0	(68,231)	0	(66,200)	0	(66,200)	0	0
Transfer from CZMF	0	(3,000)	0	(3,000)	0	(3,000)	0	0	0	3,000
Transfer from Pacific Salmon	0	(80)	0	0	0	0	0	0	0	0
Trasfr from PAC (Hollings Scholarship)	0	(1,358)	0	0	0	0	0	0	0	0
Transfer to FFPA	0	0	0	0	0	0	0	0	0	0
Transfer from USAID	0	0	0	0	0	0	0	0	0	0
Unobligated Balance, Rescission	0	0	0	0	0	0	0	0	0	0
Net Appropriation	12,015	3,356,178	12,130	3,305,178	12,177	3,416,951	12,274	3,377,607	97	(39,344)

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Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
SUMMARY OF RESOURCE REQUIREMENTS
(Dollar Amounts in Thousands)

	FY 2010		FY 2011		FY 2012		FY 2012		Increase/ Decrease	
	Actuals		Currently Available		Base Program		Estimate		FTE Amount	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Reimbursable Obligations	782	384,284	706	363,898	706	242,000	706	239,000	0	(3,000)
Total Obligations	782	384,284	706	363,898	706	242,000	706	239,000	0	(3,000)
Adjustments to Obligations:										
Deobligations	0	154	0	0	0	0	0	0	0	0
Unobligated balance, SOY Reimbursable	0	(123,307)	0	(124,898)	0	(3,000)	0	(3,000)	0	0
Unobligated balance, EOY Reimbursable	0	124,898	0	3,000	0	3,000	0	0	0	(3,000)
Unobligated balance, Expiring	0	0	0	0	0	0	0	0	0	0
Total Budget Authority	782	386,029	706	242,000	706	242,000	706	236,000	0	(6,000)
Financing from Transfers and Other:										
Transfer of unobligated balance to Asset Forfeiture Fund								3,000		3,000
Net Budget Authority	782	386,029	706	242,000	706	242,000	706	239,000	0	(3,000)

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Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
SUMMARY OF FINANCING
(Dollar Amounts in Thousands)

	FY 2010	FY 2011	FY 2012	FY 2012	Increase/(Decrease)
	Actuals	Currently Available	Base Program	Estimate	over FY 2012 Base
Direct Discretionary Obligation	3,462,475	3,422,976	3,492,151	3,449,807	(42,344)
Direct Mandatory Obligation	23,293	28,269	28,269	28,269	0
Reimbursable Obligation	384,284	363,899	242,000	239,000	(3,000)
Total Obligations	3,870,052	3,815,144	3,762,420	3,717,076	(42,344)
Adjustments and Obligations:					
Federal funds	(265,324)	(186,000)	(186,000)	(186,000)	0
Non-Federal Sources	(120,398)	(56,000)	(56,000)	(53,000)	3,000
Cash Refund	(753)	0	0	0	0
Recoveries	0	0	0	0	0
Enacted Rescissions	0	0	0	0	0
Deobligations, direct	(5,597)	0	(6,000)	(6,000)	0
Deobligations, reimbursable	(154)	0	0	0	0
Transfer of Unobligated P&D Balance	0	(312)	0	0	0
Unobligated balance, adj. SOY	(38,734)	(46,255)	0	0	0
Unobligated balance, EOY	46,255	0	0	0	0
Unobligated balance, SOY Reimbursable	(123,307)	(124,899)	0	0	0
Unobligated balance, EOY Reimbursable	124,899	0	0	0	0
Unobligated balance, Expiring Discretionary	1,570	0	0	0	0
Unobligated balance, Expiring Mandatory	2,823	0	0	0	0
Total Budget Authority	3,491,332	3,401,678	3,514,420	3,472,076	(39,344)

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
SUMMARY OF FINANCING
(Dollar Amounts in Thousands)

	FY 2010	FY 2011	FY 2012	FY 2012	Increase/(Decrease)
	Actuals	Currently Available	Base Program	Estimate	over FY 2012 Base
Financing from Transfers and Other:					
Transfer from P&D	(104,600)	(68,231)	(66,200)	(66,200)	0
Transfer from CZMF	(3,000)	(3,000)	(3,000)	0	3,000
Transfer from USDA	0	0	0	0	0
Transfer to other accounts	0	0	0	0	0
Transfer to FFPA	0	0	0	0	0
Transfer to/from Dept of Interior	0	0	0	0	0
NOAA Corps Retirement Pay (Mandatory)	(26,116)	(28,269)	(28,269)	(28,269)	0
Transfer from ORF to Pacific Salmon	(80)	0	0	0	0
Transfer to PAC	0	0	0	0	0
Transfer from PAC	(1,358)	0	0	0	0
Transfer - CCSP (USDA Farm Bill)	0	0	0	0	0
Net Appropriation	3,356,178	3,302,178	3,416,951	3,377,607	(36,344)

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 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
JUSTIFICATION OF CHANGES TO BASE

		FTE	Amount
<u>Adjustments:</u>			
Adjustment to accommodate P&D transfer reduction		41	80,511,000
Adjustment to support FY 2011 President's Budget	41		36,057,000
	41		44,454,000
			80,511,000
 <u>Financing:</u>			
In 2012, NOAA expects to realize recoveries of prior year obligations of \$6,000,000. This amount will be used to offset the budget authority in 2012.			(6,000,000)
 <u>Transfers:</u>			
NWS transfer from PAC Weather Forecast Office Construction line to the ORF Local Warnings and Forecasts line. This transfer will facilitate NWS managing all Weather Forecast Offices leases out of Operations, Research, and Facilities funds.	2		3,504,000
NESS transfer from PAC Geostationary Systems -N line to the ORF Program Support NOAA Wide Corporate Services & Agency Management line. This transfers Radio Frequency Division from NESS to Program Support.	0		810,000
NWS transfer from PAC Cooperative Observer Network Modernization to ORF Local Warnings and Forecasts.	4		
	6		4,314,000
 <u>Pay Raises</u>			
Full-year cost of 2011 pay increase and related costs: The 2011 President's Budget assumes a civilian pay raise of 0% and NOAA Corp pay raise of 1.4% to be effective January 1, 2011.		0	769,000
Total cost of 2011 pay raise			688,000
Less amount funded in 2011			(516,000)
Adjustment for FY 2012 of 2011 pay increase			172,000

2012 pay increase and related costs:

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 Operations Research and Facilities
JUSTIFICATION OF CHANGES TO BASE

	FTE	Amount
<p>A general civilian pay raise of 0% and NOAA Corp pay raise of 1.6% is assumed to be effective January 1, 2012.</p>		
Total cost in 2012 of pay increase	796,000	
Less amount not funded in 2012	(199,000)	
Total cost of January 2012 pay increase	597,000	
Payment to Working Capital Fund	-	
Total, adjustment for 2012 pay increase	597,000	
<u>OMAO Wage Marine overtime on NOAA ships</u>	0	104,250
<p>An increase of \$103,881 is required to cover the cost of overtime for OMAO's Wage Mariners in 2012.</p>		
Total cost in 2011 of Wage Marine overtime	136,804	
Less amount not funded in 2012	(32,554)	
Total cost of January 2012 pay increase	104,250	
<u>Civil Service Retirement System (CSRS)</u>	0	(1,081,354)
<p>The number of employees covered by the Civil Service Retirement System (CSRS) continues to drop as positions become vacant and are filled by employees who are covered by Federal Employees Retirement System (FERS). The estimated percentage covered by CSRS will drop from 15.6% in 2011 to 14.1% in 2012 for regular employees and remain at 0% in 2012 for law enforcement employees. Contribution rates will remain the same.</p>		
Regular:		
2012 \$1,029,861,000 x 0.141 x .07	10,164,728	
2011 \$1,029,861,000 x 0.156 x .07	11,246,082	
Subtotal	(1,081,354)	
Law Enforcement:		

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Operations Research and Facilities
JUSTIFICATION OF CHANGES TO BASE

		FTE	Amount
2012 \$10,207,000 x .000 x .075	0		
2011 \$10,207,000 x .000 x .075	0		
Subtotal	-		
Total adjustment to base	(1,081,354)		
<u>Federal Employees Retirement System (FERS)</u>		0	1,838,027
<p>The number of employees covered by the FERS continues to rise as employees covered by CSRS leave and are replaced by employees covered by FERS. The estimated percentage of payroll for regular employees covered by FERS will rise from 84.4% in 2011 to 85.9% in 2012 for regular employees. The estimated percentage of payroll for law enforcement employees covered by FERS will remain at 100.0% in 2012. The contribution rates will remain the same.</p>			
Regular:			
2012 \$1,029,861,000.00 x 0.859 x 0.117	103,504,120		
2011 \$1,029,861,000.00 x 0.844 x 0.117	101,696,714		
Subtotal	1,807,406		
Law Enforcement:			
2012 \$10,207,000.00 x 1.00 x 0.257	2,623,199		
2011 \$10,207,000.00 x 1.00 x 0.254	2,592,578		
Subtotal	30,621		
Total adjustment to base	1,838,027		
<u>Thrift Savings Plan</u>		0	308,958
<p>The cost of agency contributions to the Thrift Savings Plan will also rise as FERS participation increases. The contribution rate is expected to remain at 2%.</p>			

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JUSTIFICATION OF CHANGES TO BASE

	FTE	Amount
Regular:		
2012 \$1,029,861,000 x 0.8590 x 0.02		17,693,012
2011 \$1,029,861,000 x 0.8440 x 0.02		17,384,054
Subtotal		308,958
Law Enforcement:		
2012 \$10,207,000 x 1.00 x 0.02		204,140
2011 \$10,207,000 x 1.00 x 0.02		204,140
Subtotal		-
Total adjustment to base		308,958
<u>Federal Insurance Contribution Act (FICA)</u>	0	(154,674)
As the percentage of payroll covered by FERS rises, the cost of OASDI contributions will increase. In addition, the maximum salary subject to OASDI tax will decrease from \$114,975 in 2011 to \$110,175 in 2012. The OASDI tax rate will remain 6.2% in 2012.		
Regular:		
2012 \$1,029,861,000 x .859 x .947 x .062		51,941,375
2011 \$1,029,861,000 x .844 x .9663 x .062		52,074,454
Subtotal		(133,079)
Law Enforcement:		
2012 \$10,207,000 x 1.0 x .947 x .062		599,294
2011 \$10,207,000 x 1.0 x .9663 x .062		611,507
Subtotal		(12,213)
Other		
2012 \$72,601,000 x .859 x .947 x .062		3,661,655

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
JUSTIFICATION OF CHANGES TO BASE

		FTE	Amount
2011 \$72,601,000 x .844 x .9663 x .062	3,671,037		
Subtotal	(9,382)		
Total adjustment to base	(154,674)		
<u>Health insurance premiums</u>		0	5,061,495
<p>Effective January 2011, NOAA's contribution to Federal employees' health insurance premiums increased by 6.9%. Applied against the 2011 estimate of \$73,355,000, the additional amount required is \$5,061,495.</p>			
<u>Mileage rate increase</u>		0	(301,145)
<p>Effective January 2010, the General Services Administration decreased the mileage rate from 58.5 cents to 55 cents per mile, a 9.0% rate decrease. This percentage was applied to the 2011 estimate of \$3,346,052 to arrive at a decrease of \$301,145.</p>			
<u>Per diem increase</u>		0	3,831,869
<p>Effective October 1, 2009, the General Services Administration raised per diem rates. This increase resulted in a 6.4% increase to this bureau. This percentage was applied to the 2011 estimate of \$59,872,948 to arrive at an increase of \$3,831,869.</p>			
<u>Rental payments to GSA</u>		0	1,449,000
<p>GSA rates are projected to increase 1.7% in 2012. This percentage was applied to the 2011 estimate of \$85,241,000 to arrive at an increase of \$1,449,000.</p>			
<u>Postage</u>		0	0

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Operations Research and Facilities
JUSTIFICATION OF CHANGES TO BASE

	FTE	Amount
<p>The U.S. Postal Service has not announced any postage rates increases for first-class mail. The percentage increase of 0% will be applied to the 2011 estimate of \$2,509,000 to arrive at an increase of \$0.</p>		
<p><u>GPO Printing</u> GPO has provided an estimated rate of 1.2%. This percentage was applied to the 2011 estimate of \$10,013,000 to arrive at an increase of \$120,156.</p>	0	120,156
<p><u>PEPCO Electricity</u> An increase of \$126,000 is required for PEPCO Electricity.</p>	0	126,000
<p><u>NARA Storage & maintenance costs</u> The estimated cost of NARA storage and maintenance for 2012 is projected to increase by \$9,544.</p>	0	9,544
<p><u>Employee Compensation Fund</u> A decrease of \$1,310,000 is requested for the Employee Compensation Fund.</p>		(1,310,000)
<p><u>Working Capital Fund</u> A decrease of \$52,000 is required for the Working Capital Fund.</p>	0	(52,000)
<p><u>CBS</u> An increase of \$182,000 is required for the Commerce Business System.</p>	0	182,000
<p><u>General Pricing Level Adjustment</u></p>	0	14,866,426

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
JUSTIFICATION OF CHANGES TO BASE

This request applies OMB economic assumptions for FY 2012 to object classes where the prices the government pays are established through the market system. Factors are applied to transportation of things (\$224,496); rental payment payments to others (\$291,284); communications, utilities and miscellaneous charges (excluding postage) (\$707,980); other contractual services (\$11,666,000); supplies and materials (\$1,155,000) and equipment (\$821,676).

	<u>FTE</u>	<u>Amount</u>
<u>Grants</u>	0	589,217
Grants are projected to increase 2.8% in 2012. This percentage was applied to the 2011 estimate of \$31,709,000 to arrive at an increase of \$589,217.		
<u>Ship and Aircraft Fuel Costs</u>	0	4,249,000
Subtotal, Other Changes	0	30,605,769
Other Adjustments	0	0
Less: Absorption	0	0
Total Adjustments to Base	47	109,430,769

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Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
(Dollar Amounts in Thousands)

Object Class	FY 2010 Actuals	FY 2011 Currently Available	FY 2012 Base	FY 2012 Estimate	Increase / (Decrease)
11 Personnel compensation					
11.1 Full-time permanent	1,082,732	1,046,159	1,062,013	1,063,641	1,628
11.3 Other than full-time permanent	10,414	9,067	9,067	9,066	(1)
11.5 Other personnel compensation	68,813	68,788	68,788	68,932	144
11.6 Leave Surcharge	0	0	0	0	0
11.7 Military personnel	0	0	0	0	0
11.8 Special personnel services payments	0	133	133	133	0
11.9 Total Personnel Compensation	1,161,958	1,124,147	1,140,001	1,141,772	1,771
12 Civilian personnel benefits	328,273	303,260	321,010	321,020	10
13 Benefits for former personnel	21,999	20,515	20,515	20,515	0
21 Travel and transportation of persons	60,144	61,243	65,508	58,108	(7,400)
22 Transportation of things	14,573	18,759	18,970	15,803	(3,167)
23.1 Rental payments to GSA	70,080	84,184	86,668	84,489	(2,179)
23.2 Rental payments to others	24,593	20,680	24,619	23,844	(775)
23.3 Communications, utilities and miscellaneous charges	76,428	102,152	103,017	114,076	11,059
24 Printing and reproduction	6,760	9,926	9,995	9,787	(208)
25.1 Advisory and assistance services	174,903	184,832	183,332	221,872	38,540
25.2 Other services	489,226	600,647	618,087	586,804	(31,283)
25.3 Purchases of goods and services from Govt accounts	104,010	142,880	148,305	151,280	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	11,145	28,619	28,619	48,864	20,245
26 Supplies and materials	107,205	111,015	119,123	123,669	4,546
31 Equipment	37,219	65,210	63,210	83,598	20,388
32 Lands and structures	6,451	17,663	17,663	22,162	4,499

Department of Commerce
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 Operations Research and Facilities
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
 (Dollar Amounts in Thousands)

42 Insurance claims and indemnities	25	115	115	115	0
43 Interest and dividends	319	128	128	128	0
44 Refunds	0	0	0	0	0
99 Total Obligations	3,488,591	3,451,245	3,520,420	3,478,076	(42,344)
Unobligated Balance Lapse					
Cash Refund	(753)	0	0	0	0
Deobligations	(5,597)	0	(6,000)	(6,000)	0
Prior Year Recoveries	0	0	0	0	0
Unobligated Balance, Start of Year	(38,734)	(46,255)			
Transfer of Unobligated P&D Balance	0	(312)	0	0	0
Unobligated Balance, End of Year	46,255	0	0	0	0
Unobligated Balance, Expiring	1,570	0			
Subtotal Budget Authority	3,491,332	3,404,678	3,514,420	3,472,076	(42,344)
Less: NOAA Corps	(26,116)	(28,269)	(28,269)	(28,269)	0
Total Discretionary ORF Budget Authority	3,465,216	3,376,409	3,486,151	3,443,807	(42,344)
Positions	12,060	12,772	12,778	12,908	130
FTE	12,015	12,130	12,177	12,274	97

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
ACTIVITY/SUBACTIVITY CHANGE CROSSWALK
Part 1 – 2010 Structure
 (Dollar Amounts in Thousands)

<u>Activity/Subactivity</u>	<u>2012 Direct Obligations</u>	<u>Proposed Changes</u>
Oceanic & Atmospheric Research		
Climate Research		
Climate Laboratories & Cooperative Institutes	22,182	Move \$33,312 to Climate Service
Climate Data & Information	0	Move \$12,080 to Climate Service
Climate Competitive Research Program	0	Move \$140,199 to Climate Service
Regional Climate Assessments	0	Move \$9,000 to Climate Service
Climate Operations	0	Move \$913 to Climate Service
Other Partnership Programs	0	Move to Climate Service
Weather & Air Quality Research		
Weather & Air Quality Laboratories and Cooperative Institutes	39,412	Move \$14,921 to Climate Service
National Weather Service	0	
Local Warnings & Forecasts	732,594	Move TAO Array (\$4,300) to Climate Service
Central Forecast Guidance	73,841	Move \$6,930 (Climate Prediction Center) to Climate Service

Department of Commerce
 National Oceanic and Atmospheric Administration
 Operations Research and Facilities
ACTIVITY/SUBACTIVITY CHANGE CROSSWALK
Part 1 – 2010 Structure
 (Dollar Amounts in Thousands)

<u>Activity/Subactivity</u>	<u>2012 Direct Obligations</u>	<u>Proposed Changes</u>
National Environmental, Satellite Service		
Data Centers & Information Services		
Archive, Access, & Assessment		Move \$67,255 to Climate Service, Move \$2,622 to
KY	0	Program Support
MD	0	Move to Climate Service
NC - Quality Assurance/Quality Control	0	Move to Climate Service
WV	0	Move to Climate Service
National Environmental, Satellite, Data, and Information Service		
Coastal Data Development	0	Move \$4,559 to Climate Service
Regional Climate Centers	0	Move to \$3,500 Climate Service
International Pacific Research Ctr (U of H)	0	Move to Climate Service
Environmental Data Systems	0	Move \$9,511 to Climate Service
Modernization	0	Move to Climate Service
Integrated Environ. Applications & Info Ctr	0	Move to Climate Service
NOAA Regional Climate Center Program	0	Move to Climate Service
Coop. Institute for Remote Sensing	0	Move to Climate Service
Applications - AL	0	Move to Climate Service

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
ACTIVITY/SUBACTIVITY CHANGE CROSSWALK
Part 2 – 2012 Structure
(Dollar Amounts in Thousands)

Activity/Subactivity	FY 2008 Actual	FY 2009 Actual	FY 2010 Actual	FY 2011 Currently Available	FY 2012 Estimate
Oceanic & Atmospheric Research					
Climate Research					
Climate Laboratories & Cooperative Institutes	53,506	52,283	54,848	54,269	22,182
Climate Data & Information	0	8,299	12,080	11,952	0
Climate Competitive Research Program	138,026	132,000	144,199	142,676	0
Climate Operations	0	0	0	8,905	0
Other Partnership Programs	1,123	900	913	903	0
Subtotal Climate Research	192,655	195,482	216,139	218,705	22,182
Weather & Air Quality Research					
Weather & Air Quality Laboratories and Cooperative Institutes	45,529	49,339	54,425	54,493	39,412
Weather & Air Quality Research	3,126	8,472	9,588	9,372	14,310
Other Partnership Programs	3,163	5,600	5,475	0	0
Subtotal Weather & Air Quality Research	51,818	63,411	69,488	63,865	53,722
Congressionally Directed Projects				24,595	
Total, Oceanic & Atmospheric Research, Climate Research & Weather & Air Quality Research	244,473	258,893	285,627	282,570	75,904
National Weather Service					
Local Warnings & Forecasts Base	578,959	601,876	617,613	611,314	637,043
Subtotal Local Warnings & Forecasts Base	578,959	601,876	617,613	611,314	637,043

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
ACTIVITY/SUBACTIVITY CHANGE CROSSWALK
Part 2 – 2012 Structure
(Dollar Amounts in Thousands)

Activity/Subactivity	FY 2008 Actual	FY 2009 Actual	FY 2010 Actual	FY 2011 Currently Available	FY 2012 Estimate
Central Forecast Guidance	51,920	78,160	79,447	78,685	73,841
Subtotal, Central Forecast Guidance	51,920	78,160	79,447	78,685	73,841
National Environmental, Satellite Service					
Data Centers & Information Services					
Archive, Access, & Assessment	33,691	35,526	67,163	66,544	0
KY	6,905	6,910	0	0	0
MD	5,224	5,236	0	0	0
NC - Quality Assurance/Quality Control	1,459	1,504	0	0	0
WV	7,327	7,330	0	0	0
Subtotal, Archive, Access, & Assessment	54,606	56,506	67,163	66,544	0
National Environmental, Satellite Service					
Coastal Data Development	4,369	4,559	4,548	4,511	0
Regional Climate Centers	3,565	3,900	4,346	3,463	0
International Pacific Research Ctr (U of H)	1,781	1,750	0	0	0
Environmental Data Systems Modernization	9,126	9,511	9,549	9,411	0
Integrated Environmental Applications & Info Ctr	2,432	2,500	2,989	0	0

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Operations Research and Facilities
ACTIVITY/SUBACTIVITY CHANGE CROSSWALK
Part 2 – 2012 Structure
(Dollar Amounts in Thousands)

Activity/Subactivity	FY 2008 Actual	FY 2009 Actual	FY 2010 Actuals	FY 2011 Currently Available	FY 2012 Estimate
NOAA Regional Climate Center Program	1,030	0	850	0	0
Cooperative Institute for Remote Sensing Applications - AL		800	0	0	0
Subtotal	22,303	23,020	22,282	17,385	0
Congressionally Directed Projects				3,809	
Total NESS, Data Centers & Information Services	76,909	79,526	89,445	87,738	0
NOAA Climate Service					
Climate Research Program					
Modeling	0	0	0	0	31,225
Physical Sciences	0	0	0	0	18,610
Chemical Sciences	0	0	0	0	15,849
Global Monitoring and Research	0	0	0	0	26,884
Competitive Research Program	0	0	0	0	64,021
Subtotal Climate Research Program	0	0	0	0	156,589
Integrated Climate Services					
NIDIS	0	0	0	0	13,591
Regional Services	0	0	0	0	4,427
Assessment Services	0	0	0	0	10,000
Communication & Education	0	0	0	0	3,038
Subtotal Integrated Climate Services	0	0	0	0	31,056

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Operations Research and Facilities
ACTIVITY/SUBACTIVITY CHANGE CROSSWALK
Part 2 – 2012 Structure
(Dollar Amounts in Thousands)

Activity/Subactivity	FY 2008 Actual	FY 2009 Actual	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate
Observations and Monitoring					
Ocean Observations	0	0	0	0	49,571
Climate Data and Information Services	0	0	0	0	46,693
Ocean Data and Information Services	0	0	0	0	14,022
Geophysical Data and Information Services	0	0	0	0	6,050
Environmental Services	0	0	0	0	10,083
Atmospheric Observations	0	0	0	0	5,284
Observations, Monitoring, & Prediction for CPC					7,043
Subtotal Observations and Monitoring	0	0	0	0	138,746
Administrative Efficiency Initiative					(4,564)
Total, NOAA Climate Service	0	0	0	0	321,827
Program Support					
Corporate Services					
NOAA Wide Corporate Services & Agency Management					
NOAA Wide Corporate Services & Agency Management Base	109,894	103,516	115,286	114,341	127,946
Total, Program Support, Corporate Services & Agency Management Base	109,894	103,516	115,286	114,341	132,461
Total Direct Obligations	1,087,144	1,123,337	1,197,416	1,179,892	1,167,284

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
JUSTIFICATION OF PROPOSED LANGUAGE CHANGES

1. Coastal Zone Management Fund (language in Commerce General Provisions)

All balances in the Coastal Zone Management Fund, whether unobligated or unavailable, are hereby permanently cancelled, and notwithstanding Section 308(b) of the Coastal Zone Management Act of 1972, as amended (16 U.S.C. 1456a), any future payments to the Fund made pursuant to sections 307 (16 U.S.C. 1456) and 308 (16 U.S.C. 1456a) of the Coastal Zone Management Act of 1972, as amended, shall, in this fiscal year and any future fiscal years, be treated in accordance with the Federal Credit Reform Act of 1990, as amended.

Justification

This fund consists of loan repayments from the former Coastal Energy Impact Program. Loans under this program were made prior to 1992, but balances were not transferred to the General Fund in accordance with the Federal Credit Reform Act of 1990 (FCRA), even though the account effectively serves as a liquidating account. To resolve this inconsistency, the Budget proposes to cancel all balances in the Coastal Zone Management Fund, make future payments to the Fund subject to FCRA, and eliminate the annual transfer from this account to the Operations, Research, and Facilities account.

2. Pacific Coast Salmon Recovery

For necessary expenses associated with the restoration of Pacific salmon populations, \$65,000,000, to remain available until September 30, 2013: Provided, That of the funds provided herein the Secretary of Commerce may issue grants to the States of Washington, Oregon, Idaho, Nevada, California, and Alaska, and Federally-recognized tribes of the Columbia River and Pacific Coast (including Alaska) for projects necessary for conservation of salmon and steelhead populations that are listed as threatened or endangered, or identified by a State as at-risk to be so-listed, for maintaining populations necessary for exercise of tribal treaty fishing rights or native subsistence fishing, or for conservation of Pacific coastal salmon and steelhead habitat, based on guidelines to be developed by the Secretary of Commerce: Provided further, That all funds shall be allocated based on scientific and other merit principles and shall not be available for marketing activities: Provided further, That funds disbursed to States shall be subject to a matching requirement of funds or documented in-kind contributions of at least 33 percent of the Federal funds.

Justification

This language change is to include the Federally-recognized tribes of Alaska to directly apply for grants under the Pacific Coast Salmon Restoration Fund.

Department of Commerce
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Operations Research and Facilities
JUSTIFICATION OF PROPOSED LANGUAGE CHANGES

3. Fishermen's Contingency Fund

For carrying out the provisions of Title IV of Public Law 95-372, not to exceed \$350,000, to be derived from receipts collected pursuant to that Act, to remain available until expended.

Justification

For several years, claims have been paid with funds remaining from previous years' authorizations. Because the authorized funds have now been depleted, claims cannot be paid until funds currently on deposit in the FCF are authorized in the next available appropriations act. In total, the Fishermen's Contingency Fund has a balance of \$1,292,146, with only \$10,020 currently authorized as available for expenditure.

4. Foreign Fishing Observer Fund

Of the unobligated balances available to the Foreign Fishing Observer Fund, \$350,000 are hereby rescinded from the account.

Justification

NOAA does not anticipate foreign fishing in the U.S. EEZ requiring funds from this account.

5. Fisheries Finance Program

Subject to section 502 of the Congressional Budget Act of 1974, during fiscal year 2012, obligations of direct loans may not exceed \$24,000,000 for Individual Fishing Quota loans and not to exceed \$59,000,000 for traditional direct loans as authorized by the Merchant Marine Act of 1936: Provided, That none of the funds made available under this heading may be used for direct loans for any new fishing vessel that will increase the harvesting capacity in any United States fishery. (Department of Commerce Appropriations Act, 2010.)

Justification

The Fishermen's Finance Program (FFP) will see three major benefits as a result of this action. First, the Individual Fishing Quota (IFQ) loan program is part of the Northwest Halibut and Sablefish and Bering Sea and Aleutian Islands Crab limited entry fisheries management program that continues to stabilize these fisheries. The increase from \$16 million to \$24 million will support the implementation of the crab IFQ loan required by the management plan approved by the North Pacific Fisheries Management Council. Second, FFP traditional lending is harvesting-capacity-neutral and supports qualified established U.S. seafood companies operating

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in a sustainable fisheries environment. Last, FFP lending to marine aquaculture facilities contributes to the development of a promising avenue of seafood production and greater economic sustainability from U.S. ocean resources.

6. Fisheries Enforcement Asset Forfeiture Account

Provided further, There is established in the Treasury a non-interest bearing fund to be known as the "Fisheries Enforcement Asset Forfeiture Fund", which shall consist of all sums received as fines, penalties, and forfeitures of property for violations of any provisions of 16 U.S.C. ch. 38 or of any other marine resource law enforced by the Secretary of Commerce, including the Lacey Act Amendments of 1981 (16 U.S.C. 3371 et seq.) and with the exception of collections pursuant to 16 U.S.C. 1437: Provided further, All unobligated balances that have been collected pursuant to 16 U.S.C. 1861 or any other marine resource law enforced by the Secretary of Commerce with the exception of 16 U.S.C. 1437 shall be transferred from the Operations, Research, and Facilities account into the Fisheries Enforcement Asset Forfeiture Fund and shall remain available until expended.

Justification

Section 311(e)(1) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) authorizes the Secretary of Commerce (Secretary) to pay certain enforcement-related expenses from fines, penalties and forfeiture proceeds received for violations of the Magnuson-Stevens Act, or of any other marine resource law enforced by the Secretary. Pursuant to this authority, NOAA is establishing an account for these receipts, the Fisheries Enforcement Asset Forfeiture Fund (AFF). Certain fines, penalties and forfeiture proceeds received by NOAA are deposited into this Fund and subsequently used to pay for certain enforcement related expenses. When Congress authorized the AFF it was deemed appropriate to use these proceeds to offset in part the costs of administering the enforcement program. Expenses such as: costs directly related to the storage, maintenance, and care of seized fish, vessels, or other property during a civil or criminal proceeding; reimbursement to other Federal or State agencies for enforcement related services provided pursuant to an agreement entered into with the Secretary; and other limited uses as outlined in NOAA's Asset Forfeiture Fund policy. The NMFS Office of Law Enforcement (OLE) manages the AFF, which is used by OLE and NOAA General Counsel for Enforcement and Litigation to pay for enforcement activities.

7. Sanctuaries Enforcement Asset Forfeiture Fund

Provided further, There is established in the Treasury a non-interest bearing fund to be known as the "Sanctuaries Enforcement Asset Forfeiture Fund", which shall consist of all sums received as fines, penalties, and forfeitures of property for violations of any provisions of 16 U.S.C. 1437, which are currently deposited in the Operations, Research, and Facilities account: Provided further, All unobligated balances that have been collected pursuant to 16 U.S.C. 1437 shall be transferred from the Operations, Research, and Facilities account into the Sanctuaries Enforcement Asset Forfeiture Fund and shall remain available until expended.

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Justification

The Sanctuaries Enforcement Asset Forfeiture Fund is a new account to receive proceeds from civil penalties and forfeiture claims against responsible parties, as determined through court settlements or agreements, for violations of NOAA sanctuary regulations. Penalties received are held in sanctuary site-specific accounts from year to year, as the funds are spent on resource protection within the sanctuary site where the penalty or forfeiture occurred. Funds are expended for resource protection purposes which may include all aspects of law enforcement (from equipment to labor), community oriented policing programs, and other resource protection and management measures such as the installation of mooring buoys or restoration of injured resources.

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1. For necessary expenses of activities authorized by law for the National Oceanic and Atmospheric Administration,

5 USC 5348	15 USC 1511 b-e	16 USC 4101 et seq.	33 USC 2801 et seq.	PL 111-11, Sec 12202
5 USC 4703	15 USC 1514	16 USC 4701 et seq.	33 USC 3001 et seq.	PL 111-11, Sec 12304
7 USC 1622	15 USC 1517	16 USC 5001 et seq.	33 USC 3044 et seq.	PL 111-11, Sec 12404
10 USC 1072	15 USC 1537-40	31 USC 1105	33 USC 3045	PL 111-11, Sec 12502
10 USC 1111-1115	16 USC 661 et seq.	33 USC 706 et seq.	33 USC 3046	PL 111-348
10 USC 2311	16 USC 757a et seq.	33 USC 883 a-i et seq.	PL 111-281, Sec 708	PL 111-358, Sec 301-
12 USC 1715m	16 USC 1361	33 USC 891 et seq.	42 USC 8902-05	
15 USC 313	16 USC 1431 et seq.	33 USC 893 a-b	42 USC 9601 et seq.	
15 USC 313a	16 USC 1447a et seq.	33 USC 1121-1131	43 USC 1347e	
15 USC 313b	16 USC 1451 et seq.	33 USC 1251	44 USC 1307	
15 USC 313nt	16 USC 1456a	33 USC 1321	49 USC 44720	
15 USC 325	16 USC 1531 et seq.	33 USC 1441-44	97 Stat. 1409	
15 USC 330b	16 USC 1801 et seq.	33 USC 2706	PL 111-11, Sec 12002	
15 USC 330e	16 USC 3645		PL 111-11, Sec 12102	

Organizations and Employees

5 USC 5348 - Crews of Vessels.

“...the pay of officers and members of crews of vessels excepted from chapter 51 of this title by section 5102(c)(8) of this title shall be fixed and adjusted from time to time as nearly as is consistent with the public interest in accordance with prevailing rates and practices in the maritime industry.”

5 USC 4703- Demonstration Projects

“...the Office of Personnel Management may, directly or through agreement or contract with one or more agencies and other public and private organizations, conduct and evaluate demonstration projects.”

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Agriculture

7 USC 1622 - Distribution and Marketing of Agricultural Products

“The Secretary ... is directed and authorized: ...

- (a) to determine the needs and develop or assist in the development of plans for the proper assembly, processing, transportation, storage, distribution, and handling of agricultural (fish) products.
- (f) to conduct and cooperate in consumer education for the more effective utilization and greater consumption of agricultural products (fish)...
- (g) to collect and disseminate marketing information... for the purpose of ... bringing about a balance between production and utilization of agricultural (fish) products.
- (h) to inspect, certify, and identify the class, quality, quantity and condition of agricultural (fish) products ...
- (m) to conduct ... research ... to determine the most efficient ... processes for the handling, storing, preserving, protecting...of agricultural (fish) commodities ...”

(h) - Duties of Secretary relating to agricultural products; penalties

“Whoever knowingly shall falsely make, issue, alter, forge, or counterfeit any official certificate, memorandum, or other identification, with respect to inspection, class, grade, quality, size, quantity, or condition, issued or authorized under this section or knowingly cause or procure, or aid, assist in, or be a party to, such false making, issuing, altering, forging, or counterfeiting, or whoever knowingly shall possess, without promptly notifying the Secretary (of Commerce) or his representative, utter, published, or used as true, any such falsely made, altered forged, or counterfeited official certificate, memorandum, mark, identification, or device, or whoever knowingly represents that an agricultural product has been officially inspected or graded...when in fact such commodity has not been so graded or inspected shall be fined not more than \$1,000 or imprisoned not more than one year, or both.”

Armed Forces

10 USC 1072 Medical and Dental Care

“...The term “uniformed services” means the armed forces and the Commissioned Corps of the National Oceanic and Atmospheric Administration and of the Public Health Service.”

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10 USC 1111-1115 Determinations of Contributions to the Fund

PL 108-375, Sec. 725 Revised funding methodology for military retiree health care benefits states: "At the beginning of each fiscal year after September 30, 2005, the Secretary of the Treasury shall promptly pay into the Fund from the General Fund of the Treasury--(1) the amount certified to the Secretary by the Secretary of Defense under subsection (c), which shall be the contribution to the Fund for that fiscal year required by section 1115; and (2) the amount determined by each administering Secretary under section 1111(c) as the contribution to the Fund on behalf of the members of the uniformed services under the jurisdiction of that Secretary."

10 USC 2311 Assignment and Delegation of Procurement Functions and Responsibilities

(a) In General.--Except to the extent expressly prohibited by another provision of law, the head of an agency may delegate, subject to his direction, to any other officer or official of that agency, any power under this chapter.

(b) Procurements For or With Other Agencies.--Subject to subsection (a), to facilitate the procurement of property and services covered by this chapter by each agency named in section 2303 of this title for any other agency, and to facilitate joint procurement by those agencies--

(1) the head of an agency may delegate functions and assign responsibilities relating to procurement to any officer or employee within such agency;

(2) the heads of two or more agencies may by agreement delegate procurement functions and assign procurement responsibilities from one agency to another of those agencies or to an officer or civilian employee of another of those agencies; and

(3) the heads of two or more agencies may create joint or combined offices to exercise procurement functions and responsibilities.

Banks and Banking

12 USC 1715m - Mortgage Insurance for Servicemen [NOAA Corps].

This section authorizes payment of Federal Housing Administration (FHA) home mortgage insurance premiums to NOAA Corps Officers.

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Commerce and Trade

15 USC 313 - Duties of Secretary of Commerce [National Weather Service].

“The Secretary of Commerce...shall have charge of the forecasting of weather,...issue of storm warnings,...weather and flood signals,... gauging and reporting of rivers,...collection and transmission of marine intelligence...,...reporting of temperature and rainfall conditions..., the display of frost and cold-wave signals, the distribution of meteorological information..., and the taking of such meteorological observations as may be necessary to establish and record the climatic conditions of the United States, or as are essential for the proper execution of the foregoing duties.”

15 USC 313a - Establishment of Meteorological Observation Stations in the Arctic Region.

“... The Secretary of Commerce shall ... take such actions as may be necessary in the development of an international basic meteorological reporting network in the Arctic region of the Western Hemisphere...”

15 USC 313b - Institute for Aviation Weather Prediction

“The Administrator of the National Oceanic and Atmospheric Administration shall establish an Institute for Aviation Weather Prediction. The Institute shall provide forecasts, weather warnings, and other weather services to the United States aviation community....”

15 USC 313 note - Weather Service Modernization Act

“(a) As part of the budget justification documents submitted to Congress in support of the annual budget request for the department of Commerce, the Secretary shall include a National Implementation Plan for modernization of the National Weather Service for each fiscal year following fiscal year 1993 until such modernization is complete. The Plan shall set forth the actions, during the 2-year period beginning with the fiscal year for which the budget request is made, that will be necessary to accomplish the objectives described in the Strategic Plan.

15 USC 325 - Spending Authority for the National Weather Service

“...Appropriations now or hereafter provided for the National Weather Service shall be available for: (a) furnishing food and shelter...to employees of the Government assigned to Arctic stations; (b) equipment and maintenance of meteorological

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offices and stations, and maintenance and operation of meteorological facilities outside the United States... (c) repairing, altering, and improving of buildings occupied by the National Weather Service, and care and preservation of grounds...(d) arranging for communication services... and
(e) purchasing tabulating cards and continuous form tabulating paper .

15 USC 330b - Duties of Secretary relating to Weather Modification Activities or Attempts - Reporting Requirement.

- (a) "The Secretary shall maintain a record of weather modification activities, including attempts, which take place in the United States and shall publish summaries thereof from time to time as he determines."
- (b) "All reports, documents, and other information received by the Secretary under the provisions of this chapter shall be made available to the public to the fullest practicable extent."

15 USC 330e - Authorization of Appropriations relating to Weather Modification Activities or Attempts - Reporting Requirement.

This section provides funding authority to support the reporting requirements specified in this chapter.

15 USC 1511b - United States Fishery Trade Officers

"For purposes of carrying out export promotion and other fishery development responsibilities, the Secretary of Commerce...shall appoint not fewer than six officers who shall serve abroad to promote United States fishing interests. These officers shall be knowledgeable about the United States fishing industry, preferably with experience derived from the harvesting, processing, or marketing sectors of the industry or from the administration of fisheries programs. Such officers, who shall be employees of the Department of Commerce, shall have the designation of fishery trade officers."

15 USC 1511c - NOAA Estuarine Programs Office.

"... The Estuarine Programs Office shall develop, coordinate, and implement the estuarine activities of the administration with the activities of other Federal and State agencies. There are authorized to be appropriated to the Administration not to exceed \$560,000 for fiscal year 1989, and \$600,000 for fiscal year 1990."

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15 USC 1511d - Chesapeake Bay Office

The Secretary of Commerce shall establish, within the National Oceanic and Atmospheric Administration, an office to be known as the Chesapeake Bay Office...which shall provide technical assistance on processes impacting the Chesapeake Bay system, its restoration and habitat protection; develop a strategy to meet the commitments of the Chesapeake Bay Agreement; and coordinate programs and activities impacting the Chesapeake Bay, including research and grants.

15 USC 1511e - Office of Space Commercialization

“There is established with the Department of Commerce an Office of Space Commercialization” which shall “promote commercial provider investment in space activities...assist United States commercial providers in [their efforts to] conduct business with the United States Government, [act] as an industry advocate within the executive branch..., ensure that the United States Government does not compete with United States commercial providers..., [promote] the export of space-related goods and services, [represent] the Department of Commerce in the development of United States policies...and [seek] the removal of legal, policy, and institutional impediments to space commerce.”

15 USC 1514 - Basic Authority for Performance of Certain Functions and Activities of Department.

“Appropriations are authorized for the following activities of the Department of Commerce:

- (a) furnishing to employees...and their dependents, in Alaska and other points outside the continental United States, free emergency medical services...and supplies;
- (b) purchasing, transporting, storing, and distributing food and other subsistence supplies for resale to employees...and their dependents, in Alaska and other points outside the continental United States at a reasonable value...; the proceeds from such resales to be credited to the appropriation from which the expenditure was made;
- (c) ...establishment, maintenance, and operation of messing facilities, by contract or otherwise, in Alaska and other points outside the continental United States..., such service to be furnished to employees...and their dependents,...
- (d) reimbursement...of officers or employees in or under the Department...for food, clothing, medicines, and other supplies furnished by them in emergencies for the temporary relief of dislocated persons in remote localities;
- (e) providing motion-picture equipment and film for recreation of crews of vessels..., for recreation for employees in remote localities..., and for training purposes;

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- (f) erecting, altering, repairing, equipping, furnishing, and maintaining...such living and working quarters and facilities as may be necessary to carry out its authorized work at remote localities not on foreign soil where such living and working accommodations are not otherwise available.”

15 USC 1517 - Transfer of Statistical or Scientific Work.

“The President is authorized, by order in writing, to transfer at any time the whole or any part of any office, bureau, division, or other branch of the public service engaged in statistical or scientific work, from the Department of State, the Department of the Treasury, the Department of Defense, the Department of Justice, the United States Postal Service, or the Department of the Interior, to the Department of Commerce; and in every such case the duties and authority performed by and conferred by law upon such office, bureau, division, or other branch of the public service, or the part thereof so transferred, shall be thereby transferred with such office, bureau, division, or other branch of the public service, or the part thereof which is so transferred. All power and authority conferred by law, both supervisory and appellate, upon the department from which such transfer is made, or the Secretary thereof, in relation to the said office, bureau, division, or other branch of the public service, or the part thereof so transferred, shall immediately, when such transfer is so ordered by the President, be fully conferred upon and vested in the Department of Commerce, or the Secretary thereof, as the case may be, as to the whole or part of such office, bureau, division, or other branch of the public service so transferred.”

15 USC 1537 - 1539 Needs Assessment for Data Management.

“Not later than 12 months after October 29, 1992, and at least biennially thereafter, the Secretary of Commerce shall complete an assessment of the adequacy of the environmental data and information systems of NOAA.”

15 USC 1540 – Cooperative Agreements

“The Secretary of Commerce, acting through the Under Secretary of Commerce for Oceans and Atmosphere, may enter into cooperative agreements and other financial agreements with any nonprofit organization to (1) aid and promote scientific and educational activities to foster public understanding of the National Oceanic and Atmospheric Administration or its programs; and (2) solicit private donations for the support of such activities.”

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Conservation

16 USC 661 et seq.- Declaration of Purpose; Cooperation of Agencies; Surveys and Investigations; Donations.

“...the Secretary of the Interior is authorized (1) to provide assistance to, and cooperate with, Federal, State, and public or private agencies and organizations in the development, protection, rearing, and stocking of all species of wildlife, resources thereof, and their habitat, in controlling losses of the same from disease or other causes, in minimizing damages from overabundant species, in providing public shooting and fishing areas, including easements across public lands for access thereto, and in carrying out other measures necessary to effectuate the purposes of said sections; (2) to make surveys and investigations of the wildlife of the public domain, including lands and waters or interests therein acquired or controlled by any agency of the United States; and (3) to accept donations of land and contributions of funds in furtherance of the purposes of said sections.”

16 USC 757a et seq.- Anadromous, Great Lakes, and Lake Champlain Fisheries

The Act authorizes cooperative agreements with States “that are concerned with the development, conservation, and enhancement of [anadromous] fish” (section 757a(a)).

16 USC 1361 - Congressional Findings.

“The Congress finds that - (1) certain species and population stocks of marine mammals are, or may be, in danger of extinction or depletion as a result of man's activities;”

“The Secretary is authorized to make grants, or to provide financial assistance in such other form as he deems appropriate, to any Federal or State agency, public or private institution, or other person for the purpose of assisting such agency, institution, or person to undertake research in subjects which are relevant to the protection and conservation of marine mammals, and shall provide financial assistance for, research into new methods of locating and catching yellow-fin tuna without the incidental taking of marine mammals.”

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16 USC 1431 et seq. - Findings, Purposes, and Policies [The National Marine Sanctuaries Act, as amended].

(b) Purposes and Policies

“The purposes and policies of this title are -

- (1) to identify and designate as national marine sanctuaries areas of the marine environment which are of special national significance;
- (2) to provide authority for ... conservation and management of these marine areas ...
- (3) to support, promote, and coordinate scientific research on, and monitoring of, the resources of these marine areas...
- (4) to enhance public awareness, understanding, appreciation, and wise use of the marine environment;
- (5) to facilitate to the extent compatible with the primary objective of resource protection, all public and private uses of the resources of these marine areas not prohibited pursuant to other authorities;
- (6) to develop and implement coordinated plans for the protection and management of these areas...;
- (7) to create models of, and incentives for, ways to conserve and manage these areas...”
- (8) to cooperate with global programs ...; and
- (9) to maintain, restore, and enhance living resources ...”

16 USC 1447a et seq. - Regional Marine Research Programs

Authorizes NOAA/EPA and Governors of certain states to appoint members to a number of regional marine research boards. Each board is to develop a comprehensive four year marine research plan and “the Administrator of the National Oceanic and Atmospheric Administration shall administer a grant program to support the administrative functions of each Board.”

Authorization for the Boards expires on October 1, 1999. The authorization for appropriations expired at the end of fiscal year 1996.

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16 USC 1451 et seq. - Findings, Purposes, and Policies [Coastal Zone Management Act]

Establishes a voluntary partnership between the Federal Government and coastal States. It also establishes the National Estuarine Reserve Research program, in which the Secretary of Commerce may designate an estuarine area as a national estuarine research reserve in consultation with governor of affected state.

16 USC 1456a – Coastal Zone Management Fund

“(b) (1) The Secretary shall establish and maintain a fund, to be known as the ‘Coastal Zone Management Fund’, which shall consist of amounts retained and deposited into the Fund under subsection (a) of this section and fees deposited into the Fund under section 1456 (i) (3) of this title”

16 USC 1531 et seq. – Congressional Findings and Declaration of Purposes and Policy

The purposes of the Act are “to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species, and to take such steps as may be appropriate to achieve the purposes of the treaties and conventions set forth in [the statute]” (section 1531(b)).

16 USC 1801 et seq. - Magnuson-Stevens Fishery Conservation and Management Act.

The primary purpose of the Act is “to take immediate action to conserve and manage the fishery resources found off the coasts of the United States (section 1801(b)(1)).

16 USC 3645 - Pacific Coastal Salmon Recovery

“(A) For salmon habitat restoration, salmon stock enhancement, and salmon research, including the construction of salmon research and related facilities, there is authorized to be appropriated for each of fiscal years 2000, 2001, 2002, and 2003, \$90,000,000 to the States of Alaska, Washington, Oregon, and California. Amounts appropriated pursuant to this subparagraph shall be made available as direct payments. The State of Alaska may allocate a portion of any funds it receives under this subsection to eligible activities outside Alaska.”

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Amended in PL108-447 (FY 2005 Omnibus Appropriations Act) as follows: *Provided*, That section 628(2)(A) of the Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies Appropriations Act, 2001 (16 U.S.C. 3645) is amended—

- (1) by striking “2000, 2001, 2002, and 2003” and inserting “2005”, and
- (2) by inserting “Idaho,” after “Oregon,”.

16 USC 4101 et seq. – Interjurisdictional Fisheries

“The purposes of this chapter are - (1) to promote and encourage State activities in support of the management of interjurisdictional fishery resources, and (2) to promote and encourage management of interjurisdictional fishery resources through their range” (section 4101).

16 USC 4701 et seq. - Aquatic Nuisance Prevention and Control

Establishes an interagency Aquatic Nuisance species Task Force, of which the Administrator of NOAA is a co-chair. The task force’s responsibilities include developing and implementing “a program for waters of the United States to prevent introduction and dispersal of aquatic nuisance species; to monitor, control and study such species; and to disseminate related information.”

16 USC 5001 et seq. - Purpose of Convention

“It is the purpose ... to implement the Convention for the Conservation of Anadromous Stocks in the North Pacific Ocean, signed in Moscow, February 11, 1992.”

Money and Finance

31 USC 1105 - Budget Contents and Submission to Congress

(a) On or after the first Monday in January but not later than the first Monday in February of each year, the President shall submit a budget of the United States Government for the following fiscal year. Each budget shall include a budget message and summary and supporting information.

Amended in PL108-447 (FY 2005 Omnibus Appropriations Act) as follows: “*Provided further*, That beginning in fiscal year 2006 and for each fiscal year thereafter, the Secretary of Commerce shall include in the budget justification materials that the

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Secretary submits to Congress in support of the Department of Commerce budget (as submitted with the budget of the President under section 1105(a) of title 31, 10 United States Code) an estimate for each National Oceanic and Atmospheric Administration procurement, acquisition and construction program having a total multiyear program cost of more than \$5,000,000 and simultaneously the budget justification materials shall include an estimate of the budgetary requirements for each such program for each of the 5 subsequent fiscal years.”

Navigation and Navigable Waters

33 USC 706 et seq. - Department of Commerce; Current Precipitation Information; Appropriation.

“There is authorized an expenditure as required,..., for the establishment, operation, and maintenance by the Secretary of Commerce of a network of recording and non-recording precipitation stations, known as the Hydroclimatic Network, whenever...such service is advisable...”

33 USC 883a et seq. - Surveys and Other Activities.

“...the Secretary...is authorized to conduct the following activities:

- (1) Hydrographic and topographic surveys;
- (2) Tide and current observations;
- (3) Geodetic-control surveys;
- (4) Field surveys for aeronautical charts;
- (5) Geomagnetic, seismological, gravity, and related geophysical measurements and investigations, and observations ...”

33 USC 883b - Dissemination of Data; Further Activities.

“...the Secretary is authorized to conduct the following activities:

- (1) Analysis and prediction of tide and current data;
- (2) Processing and publication of data...;
- (3) Compilation and printing of nautical charts...;
- (4) Distribution of nautical charts...”

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33 USC 883c - Geomagnetic Data; Collection; Correlation, and Dissemination.

“To provide for the orderly collection of geomagnetic data...the Secretary ... is authorized to collect, correlate, and disseminate such data.”

33 USC 883d - Improvement of Methods, Instruments, and Equipments; Investigations and Research.

“...the Secretary ... is authorized to conduct developmental work for the improvement of surveying and cartographic methods, instruments, and equipments; and to conduct investigations and research in geophysical sciences...”

33 USC 883e - Cooperative Agreements for Surveys and Investigations; Contribution of Costs Incurred by National Oceanic and Atmospheric Administration.

“(1) The Secretary of Commerce is authorized to enter into cooperative agreements with, and to receive and expand funds made available by... for surveys or investigations... or for performing related surveying and mapping activities... and for the preparation and publication of the results thereof.”

“(2) The Secretary of Commerce is authorized to establish the terms of any cooperative agreement entered into ... including the amount of funds to be received ... which the Secretary determines represents the amount of benefits derived ... from the cooperative agreement.”

33 USC 883f - Contracts with Qualified Organizations.

“The Secretary is authorized to contract with qualified organizations for the performance of any part of the authorized functions of the National Ocean Survey...”

33 USC 883h - Employment of Public Vessels.

“The President is authorized to cause to be employed such of the public vessels as he deems it expedient to employ, and to give such instructions for regulating their conduct as he deems proper in order to carry out the provisions of this subchapter.”

33 USC 883i - Authorization of Appropriations.

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“There are hereby authorized to be appropriated such funds as may be necessary to acquire, construct, maintain, and operate ships, stations, equipment, and facilities and for such other expenditures, including personal services at the seat of government and elsewhere and including the erection of temporary observatory buildings and lease of sites therefore as may be necessary...”

33 USC 891 et seq. - Fleet Replacement and Modernization Program

“The Secretary is authorized to implement... a 15-year program to replace and modernize the NOAA fleet.”

33 USC 893et seq. - Research, Development, and Education

“The Administrator....shall establish a coordinated program of ocean, coastal, Great Lakes, and atmospheric research and development....that shall focus on the development of advanced technologies and analytical methods that will promote United States leadership in ocean and atmospheric science and competitiveness in the applied uses of such knowledge.”

33 USC 1121-1124, 1126-1129, 1131 - National Sea Grant College Program Act.

The Sea Grant Act authorizes the awarding of grants and contracts to initiate and support programs at Sea Grant colleges and other institutions for research, education, and advisory services in any field related to the conservation and development of marine resources.

In 2008, PL 110-394 (National Sea Grant College Program Amendments Act of 2008) amended 33 USC 1124 as follows –

- (1) by striking “204(c)(4)(F).” in subsection (a) and inserting “204(c)(4)(F) or that are appropriated under section 208(b).”; and
- (2) by striking the matter following paragraph (3) in subsection (b) and inserting the following -

“The total amount that may be provided for grants under this subsection during any fiscal year shall not exceed an amount equal to 5 percent of the total funds appropriated for such year under section 212.”.

PL 110-394 amended 33 USC 1127 as follows –

- (1) by striking “Not later than 1 year after the date of the enactment of the National Sea Grant College Program Act Amendments of 2002, and every 2 years thereafter,” in subsection (a) and inserting “Every 2 years,”; and (2) by adding at the end the following:

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“(c) Restriction on Use of Funds.--Amounts available for fellowships under this section, including amounts accepted under section 204(c)(4)(F) or appropriated under section 212 to implement this section, shall be used only for award of such fellowships and administrative costs of implementing this section.”

PL 110-394 amended 33 USC 1131 as follows –

(1) by striking subsection (a)(1) and inserting the following: “(1) In general.--There are authorized to be appropriated to the Secretary to carry out this title—

“(A) \$72,000,000 for fiscal year 2009;

“(B) \$75,600,000 for fiscal year 2010;

“(C) \$79,380,000 for fiscal year 2011;

“(D) \$83,350,000 for fiscal year 2012;

“(E) \$87,520,000 for fiscal year 2013; and

“(F) \$91,900,000 for fiscal year 2014.”.

(2) in subsection (a)(2)—

(A) by striking “fiscal years 2003 through 2008—“ and inserting “fiscal years 2009 through 2014—“;

(B) by striking “biology and control of zebra mussels and other important aquatic” in subparagraph (A) and inserting “biology, prevention, and control of aquatic”; and (C) by striking “blooms, including Pfiesteria piscicida; and” in subparagraph (C) and inserting “blooms; and”;

(3) in subsection (c)(1) by striking “rating under section 204(d)(3)(A)” and inserting “performance assessments”; and

(4) by striking subsection (c)(2) and inserting the following: “(2) regional or national strategic investments authorized under section 204(b)(4);”.

33 USC 1251- Water Pollution Prevention and Control

Through the National Shellfish Indicator Program, authorizes the Secretary of Commerce, in cooperation with the Secretary of Health and Human Services and the Administrator of EPA, to establish and administer a 5-year national shellfish research program for the purpose of improving existing classification systems for shellfish growing waters using the latest technological advancements in microbiology and epidemiological methods.

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33 USC 1321 - Oil and Hazardous Substances [Clean Water Act]

Authorizes the recovery of damages to natural resources in the event of an oil spill in waters of the United States. This authority has been delegated to several Federal agencies, including the Department, pursuant to an Executive Order.

33 USC 1441 - Monitoring and Research Program [Marine Protection, Research and Sanctuaries Act]

Authorizes the Secretary of Commerce, in coordination with other agencies, to initiate a comprehensive and continuing program of monitoring and research regarding the effects of the dumping of material into ocean waters or other coastal waters where the tide ebbs and flows or into the Great Lakes or their connecting waters.

33 USC 1442 - Research Program Respecting Possible Long-range Effects of Pollution, Overfishing, and Man-induced Changes of Ocean Ecosystems

Authorizes the Secretary of Commerce, in consultation with other agencies, to ... “initiate a comprehensive and continuing program of research with respect to the possible long-range effects of pollution, overfishing, and man-induced changes of ocean ecosystems.”

33 USC 1443 - Regional Management Plans for Waste Disposal in Coastal Areas.

Authorizes the Secretary of Commerce to assist the Environmental Protection Agency in assessing “the feasibility in coastal areas of regional management plans for the disposal of waste materials.”

33 USC 1444 - Annual Report

Requires the Secretary of Commerce to provide Congress with an annual report on the Department’s activities to monitor ocean dumping and research the long-range effects of pollution on ocean ecosystems.

33 USC 2706 - Natural Resources [NOAA Oil and Hazardous Substance Spill Cost Reimbursement].

“...the National Oceanic and Atmospheric Administration acts as trustee of said marine environment and/or resources, shall be deposited in the Damage Assessment and Restoration Revolving Fund ... for purposes of obligation and expenditure in

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fiscal year 1991 and thereafter, sums available in the Damage Assessment and Restoration Revolving Fund may be transferred, upon the approval of the Secretary ..., to the Operations, Research, and Facilities appropriation of the National Oceanic and Atmospheric Administration.”

33 USC 2801 et seq. - National Coastal Monitoring Act.

“The purposes of this chapter are to -

- (1) establish a comprehensive national program for consistent monitoring of the Nation's coastal ecosystems;
- (2) establish long-term water quality assessment and monitoring programs for high priority coastal waters that will enhance the ability of Federal, State, and local authorities to develop and implement effective remedial programs for those waters;
- (3) establish a system for reviewing and evaluating the scientific, analytical, and technological means that are available for monitoring the environmental quality of coastal ecosystems;
- (4) establish methods for identifying uniform indicators of coastal ecosystem quality;
- (5) provide for periodic, comprehensive reports to Congress concerning the quality of the Nation's coastal ecosystems;
- (6) establish a coastal environment information program to distribute coastal monitoring information;
- (7) provide state programs authorized under the Coastal Zone Management Act of 1972 (16 U.S.C. 1451 et seq.) with information necessary to design land use plans and coastal zone regulations that will contribute to the protection of coastal ecosystems; and
- (8) provide certain water pollution control programs authorized under the Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.) with information necessary to design and implement effective coastal water pollution controls.”

33 USC 3001 et seq.- NOAA Corps Officers

PL 108-219 states: “All action in the line of duty by, and all Federal agency actions in relation to (including with respect to pay, benefits, and retirement) a de facto officer of the commissioned corps of the National Oceanic and Atmospheric Administration who was appointed or promoted to that office without Presidential action, and without the advice and consent of the Senate, during such time as the officer was not properly appointed in or promoted to that office, are hereby ratified and approved if otherwise in accord with the law, and the President alone may, without regard to any other law relating to appointments or promotions in such corps, appoint or promote such a de facto officer temporarily, without change in the grade currently occupied in a de facto capacity, as an officer in such corps for a period ending not later than 180 days from the date of enactment of this Act.”

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33 USC 3044 et seq. -Retirement for Length of Service

PL 107-372 states: “An officer who has completed 20 years of service, of which at least 10 years was service as a commissioned officer, may at any time thereafter, upon application by such officer and in the discretion of the President, be placed on the retired list.

33 USC 3045 - Computation of Retired Pay

PL 107-372 states: “ (a) Officers first becoming members before September 8, 1980: Each officer on the retired list who first became a member of a uniformed service before September 8, 1980, shall receive retired pay at the rate determined by multiplying (1) the retired pay base determined under section 1406(g) of title 10; by (2) 2 1/2 percent of the number of years of service that may be credited to the officer under section 1405 of such title as if the officer's service were service as a member of the Armed Forces. The retired pay so computed may not exceed 75 percent of the retired pay base. (b) Officers first becoming members on or after September 8, 1980. Each officer on the retired list who first became a member of a uniformed service on or after September 8, 1980, shall receive retired pay at the rate determined by multiplying (1) the retired pay base determined under section 1407 of title 10; by (2) the retired pay multiplier determined under section 1409 of such title for the number of years of service that may be credited to the officer under section 1405 of such title as if the officer's service were service as a member of the Armed Forces. (c) Treatment of full and fractional parts of months in computing years of service (1) In general, in computing the number of years of service of an officer for the purposes of subsection (a) of this section - (A) each full month of service that is in addition to the number of full years of service creditable to the officer shall be credited as 1/12 of a year; and (B) any remaining fractional part of a month shall be disregarded. (2) Rounding Retired pay computed under this section, if not a multiple of \$1, shall be rounded to the next lower multiple of \$1.”

33 USC 3046 - Retired Grade and Retired Pay

PL 107-372 states: “Each officer retired pursuant to law shall be placed on the retired list with the highest grade satisfactorily held by that officer while on active duty including active duty pursuant to recall, under permanent or temporary appointment, and shall receive retired pay based on such highest grade, if - (1) the officer's performance of duty in such highest grade has been satisfactory, as determined by the Secretary of the department or departments under whose jurisdiction the officer served; and (2) unless retired for disability, the officer's length of service in such highest grade is no less than that required by the Secretary of officers retiring under permanent appointment in that grade.

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Use of Oil Spill Liability Trust Fund

PL 111-281, Sec. 708 amends Section 1012(a)(5) of the Oil Spill Liability Trust Fund Act by: “(2) by inserting after subparagraph (A) the following:“(B) not more than \$15,000,000 in each fiscal year shall be available to the Under Secretary of Commerce for Oceans and Atmosphere for expenses incurred by, and activities related to, response and damage assessment capabilities of the National Oceanic and Atmospheric Administration.”

The Public Health and Welfare

42 USC 8902-8905 - Acid Precipitation Program

Authorized the Administrator of NOAA to serve as co-chair of a task force to prepare a comprehensive research plan for a program to study the causes and effects of acid precipitation. Also authorizes the Administrator of NOAA to serve as the director of a related research program.

42 USC 9601 et seq. (CERCLA)

Through associated regulations and delegations, authorizes the Administrator to provide technical assistance to the Administrator, EPA, for hazardous waste response under CERCLA and the National Contingency Plan and authorizes the Administrator to act as a natural resource trustee with authority to bring a cause of action for damages resulting from an injury to, destruction of or loss of resources under NOAA’s jurisdiction.

Public Lands

43 USC 1347e - Safety and Health Regulations

Authorizes the Secretary of Commerce in cooperation with other Federal entities, to conduct studies of underwater diving techniques and equipment “suitable for protection of human safety and improvement of diver performance....”

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Public Printing and Documents

44 USC 1307 - Sale and Distribution of NOAA Nautical and Aeronautical Products.

“All nautical and aeronautical products created or published ... shall be sold at ... prices ... the Secretary of Commerce shall establish annually ... so as to recover all costs attributable to data base management, compilation, printing, and distribution of such products.”

Transportation

49 USC 44720 - Meteorological services

The Administrator of the Federal Aviation Administration shall make recommendations to the Secretary of Commerce on providing meteorological services necessary for the safe and efficient movement of aircraft in air commerce. In providing the services, the Secretary shall cooperate with the Administrator and give complete consideration to those recommendations.

“To promote safety and efficiency in air navigation to the highest possible degree, the Secretary shall -(1)observe, measure, investigate, and study atmospheric phenomena, and maintain meteorological stations and offices...(2) provide reports to the Administrator (3)cooperate with persons engaged in air commerce in meteorological services...(4)maintain and coordinate international exchanges of meteorological information... (5) participate in developing an international basic meteorological reporting network...(6)coordinate meteorological requirements in the United States to maintain standard observations...;(7)promote and develop meteorological science....

Interjurisdictional Fisheries Act

97 Stat. 1409

This Act authorizes NMFS fisheries programs not otherwise authorized by law, including research to reduce entanglement of marine mammals in fishing gear, development of habitat restoration techniques, restoration of Chesapeake Bay, and conservation of Antarctic living marine resources.

Omnibus Public Land Management Act of 2009

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PL 111-11, Sec 12002

Establishes a national ocean exploration program within the National Oceanic and Atmospheric Administration (NOAA) that promotes collaboration with other federal ocean and undersea research and exploration programs. Requires convening an ocean exploration and undersea research technology and infrastructure task force. Establishes the Ocean Exploration Advisory Board. Authorizes appropriations.

PL 111-11, Sec 12102

NOAA Undersea Research Program Act of 2009 - Establishes a NOAA undersea research program for the purpose of increasing scientific knowledge essential for the informed management, use, and preservation of oceanic, marine, and coastal areas and the Great Lakes. Requires specified research, exploration, education, and technology programs to be conducted through a network of extramural network regional undersea research centers and the National Institute for Undersea Science and Technology. Authorizes appropriations.

PL 111-11, Sec 12202

Ocean and Coastal Mapping Integration Act - Directs the President to establish a coordinated federal program to develop an ocean and coastal mapping plan for the Great Lakes and coastal state waters, the territorial sea, the exclusive economic zone, and the continental shelf of the United States that enhances ecosystem approaches in decision-making for conservation and management of marine resources and habitats, establishes research and mapping priorities, supports the siting of research and other platforms, and advances ocean and coastal science. Requires a plan for an integrated ocean and coastal mapping initiative within NOAA. Authorizes appropriations.

PL 111-11, Sec 12304

Integrated Coastal and Ocean Observation System Act of 2009 - Directs the President to establish a National Integrated Coastal and Ocean Observation System that is designed to address regional and national needs for ocean information, to gather specific data on key coastal, ocean, and Great Lakes variables, and to ensure timely and sustained dissemination and availability of such data. Requires an advisory committee. Authorizes appropriations.

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PL 111-11, Sec 12404

Federal Ocean Acidification Research And Monitoring Act of 2009 or the FOARAM Act - Directs the Joint Subcommittee on Ocean Science and Technology of the National Science and Technology Council to: (1) coordinate federal activities on ocean acidification and establish an interagency working group; and (2) develop a strategic plan for federal research and monitoring on ocean acidification. Requires specified ocean acidification programs in NOAA, the National Science Foundation (NSF), and the National Aeronautics and Space Administration (NASA). Authorizes appropriations.

PL 111-11, Sec 12502

Coastal and Estuarine Land Conservation Program Act - (Sec. 12502) Amends the Coastal Zone Management Act of 1972 to authorize the Secretary of Commerce to conduct a Coastal and Estuarine Land Conservation Program to protect important coastal and estuarine areas. Requires related property acquisition grants to coastal states with approved coastal zone management plans or National Estuarine Research Reserve units. Authorizes appropriations.

Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
CONSULTING AND RELATED SERVICES
(Dollars in Thousands)

	2010 <u>Actual</u>	2011 <u>Estimate</u>	2012 <u>Estimate</u>
Management and Professional Support Services	68,212	72,085	86,920
Studies, Analysis and Evaluations	27,985	29,573	35,660
Engineering and Technical Services	<u>78,706</u>	<u>83,174</u>	<u>100,292</u>
Total	174,903	184,832	222,872

Consulting Services are those services of a pure nature relating to the governmental functions of agency administration and management and agency problem management. These services are normally provided by persons or organizations generally considered to have knowledge and special abilities that are not usually available within the agency. Such services can be obtained through personnel appointments, procurement contracts, or advisory committees.

Management and professional services deal with management data collection, policy review or development, program development, review or evaluation, systems engineering and other management support services. Special studies and analyses deal with the highly specialized areas of agency activity, e.g., air quality, chemical, environmental, geophysical, oceanographic, technological, and etc. Management and support services for research and development are procurement actions that meet the description of management and professional services or special studies and analyses but are funded under research and development.

The Administration is pursuing an aggressive government-wide effort to curb non-essential administrative spending called the Administrative Efficiency Initiative. In order to be good stewards of taxpayer money, the Federal Government will continue to seek ways to improve the efficiency of programs without reducing their effectiveness. NOAA has targeted a number of areas to achieve these savings, including consulting and related services. The administrative savings represent real reductions to NOAA's funding level and will help reduce overall spending by the Federal government.

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Department of Commerce
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 Operations Research and Facilities
PERIODICAL, PAMPHLETS, AND AUDIOVISUAL PRODUCTS
 (Dollars in Thousands)

	2010	2011	2012
	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>
Periodicals	998	1,008	1,018
Pamphlets	719	726	733
Audiovisuals	<u>341</u>	<u>344</u>	<u>347</u>
Total	2,058	2,078	2,098

The Administration is pursuing an aggressive government-wide effort to curb non-essential administrative spending called the Administrative Efficiency Initiative. In order to be good stewards of taxpayer money, the Federal Government will continue to seek ways to improve the efficiency of programs without reducing their effectiveness. NOAA has targeted a number of areas to achieve these savings, including periodical, pamphlets, and audiovisual products. The administrative savings represent real reductions to NOAA’s funding level and will help reduce overall spending by the Federal government.

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Department of Commerce
National Oceanic and Atmospheric Administration
Operations Research and Facilities
AVERAGE GRADE AND SALARY
(Dollars in Thousands)

	2010 <u>Actual</u>	2011 <u>Estimate</u>	2012 <u>Estimate</u>
Average executive and SES level pay plans	\$166,264	\$167,927	\$169,606
Average GS/GM grade	13	13	13
Average GS/GM salary	\$88,979	\$89,869	\$90,768
Average Pay Band salary	\$95,749	\$96,706	\$97,673
Average Commissioned Officers salary	\$121,828	\$123,534	\$125,511
Average salary for other positions (FWS/Wage Marine)	\$53,040	\$53,570	\$54,106

On December 22, 2010, President Obama signed legislation to prohibit statutory pay adjustments for most Federal civilian employees. For NOAA, this includes employees under the General Schedule, Executive Schedule, and Senior Executive Service (SES), but does not include members of the NOAA Corps. The average salaries provided here reflect the pay freeze for FY11 and FY12.

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Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
SUMMARY OF RESOURCE REQUIREMENTS
(Dollar Amounts in Thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2011 Annualized Continuing Resolution	200	190	1,358,353	1,392,754
Less: Carryover	0	0	0	(32,401)
Plus: 2011 and 2012 Adjustments to Base	(6)	(6)	(9,314)	(4,314)
FY 2012 Base	194	184	1,349,039	1,356,039
Administrative Savings (actual reduction)	0	0	(10,773)	(10,773)
Plus (or less): 2012 Program Changes	0	0	714,511	714,511
FY 2012 Estimate	194	184	2,052,777	2,059,777

Comparison by activity/subactivity		FY 2010 Actuals		FY 2011 Currently Available		FY 2012 Base Program		FY 2012 Estimate		Increase/Decrease	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
National Ocean Service	Pos/BA	1	40,849	1	40,890	1	40,890	1	31,734	0	(9,156)
	FTE/OBL	16	42,567	1	44,581	1	40,890	1	31,734	0	(9,156)
National Marine Fisheries Service	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	2,082	0	1,524	0	0	0	0	0	0
Oceanic and Atmospheric Research	Pos/BA	0	10,369	0	10,379	0	0	0	0	0	0
	FTE/OBL	5	99,576	0	10,539	0	0	0	0	0	0
Climate Service	Pos/BA	0	0	0	0	0	36,425	0	24,391	0	(12,034)
	FTE/OBL	0	0	0	0	0	36,425	0	24,391	0	(12,034)

Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
SUMMARY OF RESOURCE REQUIREMENTS
(Dollar Amounts in Thousands)

Comparison by activity/subactivity		FY 2010 Actual		FY 2011 Currently Available		FY 2012 Base Program		FY 2012 Estimate		Increase/ Decrease	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
National Weather Service	Pos/BA	32	107,619	32	107,727	30	100,489	30	91,190	0	(9,299)
	FTE/OBL	33	111,711	31	131,770	29	100,489	29	91,190	0	(9,299)
National Environmental Satellite Service	Pos/BA	162	1,198,160	162	1,199,357	158	1,176,235	158	1,897,536	0	721,301
	FTE/OBL	180	1,239,198	153	1,200,080	149	1,176,235	149	1,897,536	0	721,301
Program Support	Pos/BA	0	0	0	0	0	0	0	900	0	900
	FTE/OBL	3	95,195	0	2,070	0	0	0	900	0	900
Office of Marine Aviation & Ops	Pos/BA	0	1,998	5	2,000	5	2,000	5	14,026	0	12,026
	FTE/OBL	3	81,587	5	2,190	5	2,000	5	14,026	0	12,026
Less Deobligations	Pos/BA	0	(2,000)	0	(2,000)	0	(7,000)	0	(7,000)	0	0
	FTE/OBL	0	0	0	0	0	0	0	0	0	0
Total	Pos/BA	200	1,356,995	200	1,358,353	194	1,349,039	194	2,052,777	0	703,738
	FTE/OBL	240	1,671,916	190	1,392,754	184	1,356,039	184	2,059,777	0	703,738

Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
SUMMARY OF RESOURCE REQUIREMENTS
(Dollar Amounts in Thousands)

	FY 2010		FY 2011		FY 2012		FY 2012		Increase/ Decrease	
	FTE	Actual Amount	FTE	Currently Available Amount	FTE	Base Program Amount	FTE	Estimate Amount	FTE	Amount
Direct Discretionary Obligation	240	1,671,916	190	1,392,754	184	1,356,039	184	2,059,777	0	703,738
Total Obligations	240	1,671,916	190	1,392,754	184	1,356,039	184	2,059,777	0	703,738
Adjustments to Obligations:										
Recoveries	0	0	0	0	0	0	0	0	0	0
Cash Refunds/Prior Year Recoveries	0	(219)	0	0	0	0	0	0	0	0
Deobligations	0	(2,326)	0	(2,000)	0	(7,000)	0	(7,000)	0	0
Unobligated Balance Expired	0	2,376	0	0	0	0	0	0	0	0
Unobligated Balance Adj SOY	0	(373,153)	0	0	0	0	0	0	0	0
Unobligated balance, Adj EOY	0	32,401	0	0	0	0	0	0	0	0
Transfer to NOAA ORF	0	0	0	0	0	0	0	0	0	0
Total Budget Authority	240	1,330,995	190	1,390,754	184	1,349,039	184	2,052,777	0	703,738
Financing from Transfers and Other:										
Transfer to ORF - Hollings Scholarship	0	0	0	0	0	0	0	0	0	0
Unoblig Balance Rescission Adj Appn	0	0	0	0	0	0	0	0	0	0
Transfer to ORF	0	0	0	0	0	0	0	0	0	0
Transfer from ORF to PAC	0	0	0	0	0	0	0	0	0	0
Transfer from PAC to ORF	0	1,358	0	0	0	0	0	0	0	0
Net Appropriation	240	1,332,353	190	1,390,754	184	1,349,039	184	2,052,777	0	703,738

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Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
SUMMARY OF FINANCING
(Dollar Amounts in Thousands)

	FY 2010	FY 2011	FY 2012	FY 2012	Increase/(Decrease)
	Actuals	Currently Available	Base Program	Estimate	over FY 2012 Base
Direct Discretionary Obligation	1,671,916	1,392,754	1,356,039	2,059,777	703,738
Total Obligations	1,671,916	1,392,754	1,356,039	2,059,777	703,738
Adjustments and Obligations:					
Cash Refund	(219)	0	0	0	0
Deobligations	(2,326)	(2,000)	(7,000)	(7,000)	0
Unobligated balance, adj. SOY	(373,153)	(32,401)	0	0	0
Unobligated balance, EOY	32,401	0	0	0	0
Unobligated balance, expiring EOY	2,376	0	0	0	0
Unobligated Balance, rescission	0	0	0	0	0
Total Budget Authority	1,330,995	1,358,353	1,349,039	2,052,777	703,738
Financing from Transfers and Other:					
Transfer to ORF	1,358	0	0	0	0
Transfer from GSA	0	0	0	0	0
Transfer from ORF	0	0	0	0	0
Unobligated Balance, Rescission	0	0	0	0	0
Net Appropriation	1,332,353	1,358,353	1,349,039	2,052,777	703,738

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Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
JUSTIFICATION OF CHANGES TO BASE

	FTE	Amount
<u>Adjustments:</u>		
Less unrequested projects		0
Restoration of FY 2010 adjustment	0	2,000,000
Subtotal Adjustments	0	2,000,000
<u>Financing:</u>		
In FY 2011, NOAA expects to realize recoveries of prior year obligations of \$7,000,000. This amount will be used to offset the budget authority in 2012.	0	(7,000,000)
	0	(7,000,000)
<u>Transfer:</u>		
NWS transfer from PAC Weather Forecast Office Construction line to the ORF Local Warnings and Forecasts line. This transfer will facilitate NWS managing all Weather Forecast Offices leases out of Operations, Research, and Facilities funds.	(2)	(3,504,000)
NESS transfer from PAC Geostationary Systems -N line to the ORF Program Support NOAA Wide Corporate Services & Agency Management line. This transfers Radio Frequency Division from NESS to Program Support.		(810,000)
NWS transfer from PAC Cooperative Observer Network Modernization to ORF Local Warnings and Forecasts.	(4)	0
	(6)	(4,314,000)
Subtotal, Other Changes	0	0
Total Adjustments to Base	(6)	(9,314,000)

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National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
(Dollar Amounts in Thousands)

Object Class	FY 2010 Actuals	FY 2011 Currently Available	FY 2012 Base	FY 2012 Estimate	Increase / (Decrease)
11 Personnel compensation					
11.1 Full-time permanent	29,536	18,306	18,306	18,118	(188)
11.3 Other than full-time permanent	137	2	2	2	0
11.5 Other personnel compensation	1,066	2,410	2,410	2,410	0
11.6 Leave Surcharge	0	0	0	0	0
11.7 Military personnel	0	0	0	0	0
11.8 Special personnel services payments	0	75	75	75	0
11.9 Total Personnel Compensation	30,738	20,793	20,793	20,605	(188)
12 Civilian personnel benefits	7,481	3,152	3,152	3,107	(45)
13 Benefits for former personnel	42	0	0	0	0
21 Travel and transportation of persons	3,444	3,298	3,281	3,060	(221)
22 Transportation of things	292	315	315	316	1
23.1 Rental payments to GSA	5,471	9,970	9,970	9,970	0
23.2 Rental payments to others	2,024	1,909	1,909	909	(1,000)
23.3 Communications, utilities and miscellaneous charges	9,221	6,038	6,038	6,038	7
24 Printing and reproduction	27	27	141	141	0
25.1 Advisory and assistance services	145,003	51,952	51,952	56,103	4,151
25.2 Other services	170,715	176,065	144,773	860,248	715,475
25.3 Purchases of goods and services from Govt accounts	871,629	969,154	968,344	968,344	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	36,909	30,214	30,214	30,214	0
26 Supplies and materials	14,470	12,851	12,808	12,725	(83)
31 Equipment	237,861	39,455	38,728	39,084	356

Department of Commerce
 National Oceanic and Atmospheric Administration
 Procurement, Acquisition, and Construction
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
 (Dollar Amounts in Thousands)

Object Class	FY 2010 Actuals	FY 2011 Currently Available	FY 2012 Base	FY 2012 Estimate	Increase / (Decrease)
32 Lands and structures	78,316	37,003	33,499	20,100	(13,399)
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	58,186	30,428	30,428	29,112	(1,316)
42 Insurance claims and indemnities	3	0	0	0	0
43 Interest and dividends	85	16	16	16	0
44 Refunds	0	0	0	0	0
99 Total Obligations	1,671,916	1,392,754	1,356,039	2,059,777	703,738
Cash Refund	(219)	0	0	0	0
Prior Year Recoveries	0	(7,000)	(7,000)	(7,000)	0
Deobligations	(2,326)	0	0	0	0
Unobligated Balance, expiring	2,376	0	0	0	0
Unobligated Balance, Start of Year	(373,153)	(32,401)	0	0	0
Unobligated Balance, End of Year	32,401	0	0	0	0
Subtotal Budget Authority	1,330,995	1,353,353	1,349,039	2,052,777	703,738
Total Discretionary PAC Budget Authority	1,330,995	1,353,353	1,349,039	2,052,777	703,738
Positions	240	200	194	194	0
FTE	240	190	184	184	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Procurement, Acquisition, and Construction
ACTIVITY/SUBACTIVITY CHANGE CROSSWALK
Part 1 – 2010 Structure
 (Dollar Amounts in Thousands)

<u>Activity/Subactivity</u>	<u>2012 Direct Obligations</u>	<u>Proposed Changes</u>
Oceanic & Atmospheric Research		
Systems Acquisition		
Research Supercomputing/CCRI	0	Move to \$10,379 Climate Service
National Weather Service	0	
Systems Acquisition		
Cooperative Observer Network Modernization (NERON)	0	Move to \$3,734 Climate Service
National Environmental, Satellite, Data, and Information Service		
Systems Acquisition		
Geostationary Systems - N	33,967	Move \$2,846 to Climate Service
EOS & Advanced Polar Processing, Distribution, and Archiving Systems		Move to \$990 Climate Service
Comprehensive Large Array Stewardship System (CLASS)		Move to \$18,476 Climate Service

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Department of Commerce
National Oceanic and Atmospheric Administration
Procurement, Acquisition, and Construction
ACTIVITY/SUBACTIVITY CHANGE CROSSWALK
Part 2 – 2012 Structure
(Dollar Amounts in Thousands)

Activity/Subactivity	FY 2008 Actual	FY 2009 Actual	FY 2010 Actual	FY 2011 Currently Available	FY 2012 Estimate
Oceanic & Atmospheric Research					
Systems Acquisition					
Research Supercomputing/CCRI	10,121	90,832	10,369	10,379	0
Subtotal Systems Acquisition	10,121	90,832	10,369	10,379	0
Total, Oceanic & Atmospheric Research	10,121	90,832	10,369	10,379	0
National Weather Service					
Systems Acquisition					
Cooperative Observer Network Modernization	4,050	3,734	3,734	3,734	0
Subtotal Systems Acquisition	4,050	3,734	3,734	3,734	0
Total, National Weather Service	4,050	3,734	3,734	3,734	0
National Environmental, Satellite, Data, and Information Service					
Systems Acquisition					
Geostationary Systems - N	80,475	73,263	57,601	57,601	33,697
EOS & Advanced Polar Processing, Distribution, and Archiving Systems	965	990	990	990	0
Comprehensive Large Array Stewardship System (CLASS)	7,253	16,467	18,476	18,476	0
Subtotal Systems Acquisition	88,693	90,720	77,067	77,067	33,697
Total, National Environmental, Satellite, Data, and Information Service	88,693	90,720	77,067	77,067	33,967

Department of Commerce
 National Oceanic and Atmospheric Administration
 Procurement, Acquisition, and Construction
ACTIVITY/SUBACTIVITY CHANGE CROSSWALK
Part 2 – 2012 Structure
 (Dollar Amounts in Thousands)

Activity/Subactivity	FY 2008 Actual	FY 2009 Actual	FY 2010 Actual	FY 2011 Currently Available	FY 2012 Estimate
NOAA Climate Service					
Climate Research Program					
Research Supercomputing	0	0	0	0	10,379
Subtotal Climate Research Program	0	0	0	0	10,379
Observations and Monitoring					
Historical Climate Network Modernization	0	0	0	0	3,700
EOS & Advanced Polar Processing, Distribution, and Archiving Systems	0	0	0	0	990
Data Center Modernization	0	0	0	0	2,846
Comprehensive Large Array Stewardship System (CLASS)	0	0	0	0	6,476
Subtotal Observations and Monitoring	0	0	0	0	14,012
Total, NOAA Climate Service	0	0	0	0	24,391
Total Direct Obligations	102,864	185,286	91,180	91,180	58,358

BUDGET AUTHORITY: NATIONAL OCEAN SERVICE

For FY 2012, NOAA requests a net decrease of \$19,157,000 and an increase of 13 FTE over the FY 2010 enacted level for a total of \$559,553,000 and 1,259 FTE for the National Ocean Service. This increase includes \$7,385,000 in inflationary adjustments.

BASE JUSTIFICATION FOR FY 2012:

National Ocean Service Overview

The National Ocean Service is the primary Federal agency that observes, measures, assesses, and manages the Nation's coastal, ocean and Great Lakes areas, provides critical navigation products and services, and conducts response and restoration activities to protect vital coastal resources. These activities support sound decision-making for human, ecological, and economic health. An estimated 154 million people (over 50 percent of the United States population) lived in coastal counties in 2004. These coastal counties make up only 17 percent of the Nation's land area. Although coastal population growth reflects the same rate of growth as that of the entire Nation, the limited land area of coastal counties is increasingly strained by the density of population growth. This increasing density, coupled with the important economies of coastal areas, makes the task of managing coastal resources increasingly difficult, especially with the Nation's coastal population expected to increase by more than 11 million by 2015 (*Population Trends Along the Coastal United States: 1980-2008*, NOAA 2004). In addition, over half of the U.S. Gross Domestic Product (GDP) is generated in coastal counties (*An Ocean Blueprint for the 21st Century*, USCOP 2004), highlighting the importance of coastal resources to the Nation's economy and emphasizing the need for access to data and sound science to inform decision making.

As a national leader for coastal and ocean stewardship and a trustee of coastal resources, NOS promotes a wide range of research and operational activities to better understand and manage ocean, coastal, and Great Lakes ecosystems. Research provides the strong science foundation required to effectively manage and advance the sustainable use of our coastal and ocean systems, improve ecosystem and human health, and support economic vitality. NOS promotes advancements in the quality, quantity, geographic distribution, and timeliness of ocean and coastal observations through innovative research and technology development. Observations by NOS assets and partners are critical components of the Nation's Integrated Ocean Observing System (IOOS[®]) and the Global Earth Observation System of Systems (GEOSS). NOS mapping, charting, geodetic, and oceanographic activities build on marine and coastal observations to increase the efficiency and safety of maritime commerce, support coastal resource management, implement coastal and marine spatial planning, and address coastal flooding and water quality concerns. NOS protects and restores coastal resources damaged by releases of oil and other hazardous materials. NOS also protects and manages the special marine areas of the Nation's marine sanctuaries and the Papahānaumokuākea Marine National Monument, and, through partnerships with coastal states, protects and manages the Nation's valuable coastal zones and nationally significant estuarine reserves. NOS helps international, Federal, state, and local managers build the skills and capacity to protect, restore, and use coastal ecosystems by providing financial and technical assistance, process and technical skill training, and other applied research and capacity-building resources.

NOS translates science into action, delivering the information, tools, and technical services needed to address issues such as climate change, population growth, ecosystem management, port congestion, and contaminants in the environment. Through a diversity of programs, NOS supports healthy, resilient coastal communities; promotes sustainable robust coastal economies; and protects the productivity and diversity of coastal and marine places.

In working towards vibrant, healthy coasts and economies, the strength of NOS's broad portfolio is apparent.

- In implementing coastal and marine spatial planning, NOS brings together needed observations, mapping, regional relationships, and management.
- When responding to disasters such as the BP Deepwater Horizon oil spill, NOS serves as the leading scientific resource for spills and delivers aerial imagery, observations, mapping, trajectory forecasts, assessment, and restoration.
- As natural and human-induced hazards threaten our Nation's coasts, NOS is monitoring sea level rise, delivering products to increase community resiliency, and monitoring for threats to human health.

NOS has three subactivities under the Operations, Research and Facilities (ORF) account (\$529,605,000 and 1,230 FTE),

- Navigation Services (\$167,412,000 and 550 FTE) includes the Office of Coast Survey (OCS), the National Geodetic Survey (NGS), and the Center for Operational Oceanographic Products and Services (CO-OPS). The activities of these offices are conducted under the authority of the Coast and Geodetic Survey Act of 1947, the Hydrographic Services Improvement Act (as amended in 2008), and the Ocean and Coastal Mapping Integration Act of 2009.
- Ocean Resources Conservation and Assessment (\$191,075,000 and 428 FTE) includes programs managed by the National Centers for Coastal Ocean Science (NCCOS), the Office of Response and Restoration (ORR), the Coastal Services Center (CSC), the Office of Ocean and Coastal Resource Management (OCRM), and the NOAA Integrated Ocean Observing System (IOOS) Program. These activities are implemented primarily under the authorities established in the Harmful Algal Bloom and Hypoxia Research and Control Act; National Coastal Monitoring Act; Oceans and Human Health Act; Oil Pollution Act; Marine Debris Research, Prevention, and Reduction Act; Coastal Zone Management Act; Coral Reef Conservation Act; and the Integrated Coastal and Ocean Observation Systems Act.
- Ocean and Coastal Management (\$155,498,000 and 252 FTE) includes programs managed by the Office of Ocean and Coastal Resource Management (OCRM) and the Office of National Marine Sanctuaries (ONMS). These activities are conducted under the authority of the Coastal Zone Management Act and the National Marine Sanctuaries Act.

Procurement, Acquisition, and Construction (PAC) activities (\$40,890,000 and 1 FTE) include: the Coastal Estuarine Land Conservation Program (CELCP), the National Estuarine Research Reserve System (NERRS) Construction and Land Acquisition Program and the National Marine Sanctuaries Construction Program and are implemented by OCRM and ONMS.

NOS manage one mandatory account, the NOAA Damage Assessment and Restoration Revolving Fund (\$15,600,000 and 16 FTE). The NOAA Damage Assessment and Restoration Revolving Fund facilitates and sustains: (1) natural resource damage assessment while the Departments of Commerce and Justice seek full reimbursement from potentially responsible parties; and (2) restoration, replacement or acquisition of the equivalent of injured or lost natural resources, including resources of National Marine Sanctuaries and National Estuarine Research Reserves, tidal wetlands and other habitats, for which NOAA is trustee. These program functions are conducted jointly within NOAA by the Office of General Counsel, the National Ocean Service, and the National Marine Fisheries Service.

To implement these efforts, NOS staff and facilities are located around the country with concentrations in Silver Spring, MD; Charleston, SC; Seattle, WA; Norfolk, VA; Beaufort, NC; and Honolulu, HI.

Research and Development Investments:

The NOAA FY 2012 Budget estimates for its activities, including research and development programs, are the result of an integrated requirements-based strategic planning process. This process provides the structure to link NOAA's strategic vision with programmatic detail and budget development, with the goal of maximizing resources while optimizing capabilities. NOS requests \$90,966,000 for investments in R&D and infrastructure to support R&D in the FY 2012 Budget.

NOAA's strategic planning process makes specific reference to the objectives and milestones outlined in the NOAA 5-Year Research Plan for 2008-2012. The strict management of planning against these investment criteria, objectives, and milestones leads to NOAA budget proposals that reflect the research and development needs of the organization. The NOAA Research Council - an internal body composed of senior scientific personnel from every line office in the agency - is tasked with developing the 5-Year Research Plan, and provides corporate oversight to ensure that NOAA's research activities are of the highest quality, meet long-range societal needs, take advantage of emerging scientific and technological opportunities, and shape a forward-looking research agenda.

Significant Adjustments-to-Base (ATBs):

NOAA requests a net increase of 1 FTE and \$7,385,000 to fund adjustments to current programs for NOS activities. The increase will provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Service Administration (GSA).

NOAA also requests the following transfers for a net change of \$0:

From Office	Line	To Office	Line	Amount
NOS	Ocean Research Priorities Plan Implementation	NOS	IOOS Regional Observations	\$3,000,000
NOS	Ocean Research Priorities Plan Implementation	NOS	Coastal Services Center	\$3,000,000
NOS	Oceans Health Initiative	NOS	National Centers for Coastal Ocean Science	\$4,000,000
NOS	Center for Coastal Environmental Health and Biomolecular Research (CEHBR)	NOS	National Centers for Coastal Ocean Science	\$11,300,000
NOS	CEHBR – Oxford, MD	NOS	National Centers for Coastal Ocean Science	\$4,500,000
NOS	Center for Coastal Fisheries Habitat Research	NOS	National Centers for Coastal Ocean Science	\$5,000,000
NOS	Center for Coastal Monitoring and Assessment	NOS	National Centers for Coastal Ocean Science	\$7,000,000
NOS	Center for Sponsored	NOS	National Centers for Coastal	\$2,700,000

	Coastal Ocean Research		Ocean Science	
NOS	NCCOS Headquarters	NOS	National Centers for Coastal Ocean Science	\$4,000,000
NOS	Center for Human Health Risk	NOS	National Centers for Coastal Ocean Science	\$4,000,000
NOS	Damage Assessment Program	NOS	Response and Restoration Base	\$9,300,000

NOAA requests a technical adjustment to move \$3,000,000 from NOS Ocean Research Priorities Plan Implementation to NOS Coastal Services Center. These funds will be used to support the Ocean Research Priorities Plan's near-term priority of Forecasting the Response of Coastal Ecosystems to Persistent Forcing and Extreme Events.

NOAA requests a technical adjustment to move \$3,000,000 from NOS Ocean Research Priorities Plan Implementation to NOS IOOS Regional Observations. These funds will be used to support the Ocean Research Priorities Plan's near-term priority to develop ocean sensors.

NOAA requests a technical adjustment to move \$4,000,000 and 2 FTE from the Oceans Health Initiative to the National Centers for Coastal Ocean Science. This transfer will terminate the current Oceans Health Initiative line item and will transfer those activities associated with Oceans and Human Health to the National Centers for Coastal Ocean Science.

NOAA requests technical adjustments to consolidate the \$38,500,000 allocated in the FY 2011 annualized continuing resolution to the individual centers of the National Centers for Coastal Ocean Science (NCCOS) into one NCCOS base line.

NOAA requests a technical adjustment to move the \$9,300,000 allocated to the Damage Assessment Program into the Response and Restoration Base to consolidate Response and Restoration activities.

Other Adjustments:

The NOAA FY 2012 Budget for NOS also requests other adjustments in the amount of \$5,515,000 to restore funds that were anticipated in FY 2011 to be transferred from the Department of Agriculture related to the Promote and Develop (P&D) account. The P&D transfer represents funds derived from duties on imported fisheries products and are transferred to NOAA from the Department of Agriculture. The annualized FY 2011 Continuing Resolution provided \$36,056,800, including carryover, less than requested in FY 2011 President's Budget due to a downturn in the international fisheries markets. To address the difference between estimated and actual transfer amounts in FY 2011, NOAA allocated the shortfall in the transfer to each of its seven line offices, taking a 1.06 percent reduction to each Program, Project, or Activity (PPA) line. For FY 2012 NOAA requests an adjustment to offset the impact of the FY 2011 shortfall.

From Office	Line	To Office	Line	Amount
NOS	All	NOS	All	\$5,515,000

Administrative Cost Savings:

The Administration is pursuing an aggressive government-wide effort to curb non-essential administrative spending called the Administrative Efficiency Initiative (AEI). In order to be good stewards of taxpayer money the Federal Government should continue to seek ways to improve the efficiency of programs without reducing their effectiveness. As such, the President directed each agency to analyze its administrative costs and identify savings where possible. The National Ocean Service (NOS) has targeted a number of areas to achieve these savings. After reviewing its administrative costs, NOS has identified \$9,323,000 in administrative savings, at both the Line Office Headquarters level and throughout the program offices. Using NOAALink, NOS anticipates saving money through more strategic sourcing of products and services. Consolidation of products will enable buying in bulk to reduce prices. Consolidation of services will also result in dollar savings by reducing the number of contracts to be managed. In the area of human capital, NOS expects to reduce its costs by canceling some planned hires, increasing hiring efficiencies, and selectively hiring for certain positions. Administrative savings in the area of logistics plans and in general administrative support have been identified by limiting of the use of overnight mail services as well as consolidating services through a single provider. In addition, NOS is reducing travel and printing costs, and identifying ways to accomplish our mission with reduced contract services. NOS has also identified savings tied to IT related items, primarily through delaying the refresh of computer equipment. The \$9,323,000 in administrative savings identified above represent real reductions to the National Ocean Service's funding level and will help reduce overall spending by the Federal government.

Headquarters Administrative Costs:

In FY 2012, NOS Line Office headquarters will use \$27,482,500, after instituting planned savings as a result of the AEI mentioned above, in funds to support general management activities, financial and budgeting, and IT related expenses, as well as supporting facilities and other general operating costs. These funds also include support for service contracts, utilities, and rent charges from the General Services Administration. As part of the AEI, NOS has reviewed its Line Office Headquarters costs and will be able to reduce previously planned costs by \$880,000. Specifically, NOS will use headquarters administrative funds to support the following:

Headquarters Program Support Type	Description	FY 2012 Amount	FY 2012 FTE associated with NOS Line Office HQ
General Management & Direction	Includes Assistant Administrator's office, public affairs, information services	\$13,095,400	57.0
CFO Operations	Includes Budget, Finance and Accounting	\$4,779,500	25.9
CIO Operations	Includes IT-related expenses and other CIO related activities	\$7,846,200	14.0
CAO Operations	Includes Facilities and Security costs, as well as other CAO related activities	\$1,765,300	1.1
Human Resources	All HR services, including EEO	\$739,900	4.0
Procurement services,		\$136,200	1.0

Acquisitions, and Grants Management Operations			
Total before AEI savings		\$28,362,500	103.0
<i>AEI Savings</i>		<i>(\$880,000)</i>	-
Total post AEI savings		\$27,482,500	103.0

NOAA recognizes the need to improve the transparency of the policies and procedures used by its line office headquarters to bill component programs for management and administrative services. NOAA is currently re-evaluating, standardizing, and documenting these policies and procedures for each line office. Prior to the beginning of FY 2012, NOAA will publish its policies and procedures for assessing headquarters and administrative costs within the line offices on the NOAA CFO public website along with other budget and finance documents. NOAA looks forward to working with the Congress and other interested parties to increase the transparency and confidence in NOAA's financial management.

APPROPRIATION: OPERATIONS, RESEARCH AND FACILITIES
SUBACTIVITY: NAVIGATION SERVICES

The objectives of the Navigation Services subactivity are to:

- Survey and chart the Nation's oceans and coasts
- Define the national shoreline
- Define, develop and maintain the National Spatial Reference System
- Provide real-time observations and forecasts of water levels, tides, and currents

To achieve these objectives, NOAA conducts activities in several program areas within the Office of Coast Survey (OCS), the National Geodetic Survey (NGS), and the Center for Operational Oceanographic Products and Services (CO-OPS). These activities are conducted under the authority of the Coast and Geodetic Survey Act of 1947, the Hydrographic Services Improvement Act (as amended in 2008), and the Ocean and Coastal Mapping Integration Act of 2009. NOAA also represents these programs for the Department of Commerce on the interagency Committee for the Marine Transportation System.

The Navigation Services subactivity contains three items: Mapping and Charting, Geodesy, and Tides and Currents.

MAPPING AND CHARTING (<http://nauticalcharts.noaa.gov/>)

NOAA's Mapping and Charting Program is carried out by the Office of Coast Survey (with support from the National Geodetic Survey and the Center for Operational Oceanographic Products and Services). Established by President Thomas Jefferson in 1807, the Coast Survey is the oldest scientific organization in the U.S., with a long history of supporting maritime commerce and the Nation's economic growth. Authorized to survey and chart the 3.4 million square nautical miles of U.S. Exclusive Economic Zone (EEZ) waters by the Coast and Geodetic Survey Act of 1947 and the Hydrographic Services Improvement Act of 1998 (as amended), the program today continues to support safe, efficient, environmentally sound transportation in U.S. waters by delivering nautical charts and navigation products to meet the needs of increasingly larger ships carrying people, cargo and hazardous materials. Through this program, NOAA supports commercial shipping, the fishing industry, U.S. Navy and U.S. Coast Guard Homeland Security operations, state and local governments, and recreational boaters throughout U.S. waters. Coast Survey serves as the Nation's Hydrographer in international fora such as the International Hydrographic Organization to set standards for surveying and charting, and to build hydrographic capacity in other nations for safe navigation globally. The Mapping and Charting Program also conducts modeling and research and development activities to improve the tools, accuracy, and productivity of its data collection and chart compilation efforts.

Furthermore, the hydrographic and shoreline data that this program collects are fundamental for coastal zone and emergency management, climate assessments, coastal research, and many other uses. The work of the Mapping and Charting Program provides a foundation for the nine priorities identified in the National Ocean Policy, adopted on July 19, 2010 by Executive Order #13547, which includes Coastal and Marine Spatial Planning. This program is also the primary focus for Integrated Ocean and Coastal Mapping (IOCM) activities and efficient use of taxpayer dollars with multi-purpose mapping data. NOAA's Hydrographic Services Review Panel (HSRP), a Federal Advisory Committee, plays an oversight role. Mapping and Charting services fall under four of the HSRP's top priority recommendations for action in surveying and mapping U.S. waters, integrating those mapping efforts across Federal agencies charged with maintaining the U.S. Marine Transportation

System, strengthening capacity for emergency response, and improving dissemination of information to users of all kinds.

The Mapping and Charting item consists of five primary program elements:

- **Marine Charts** – Cartographers in this program compile data from many sources to analyze and produce over 1,000 nautical charts and products for safe maritime commerce in the Exclusive Economic Zone (EEZ). Nautical charts and updates are generated in both vector and raster formats to produce Electronic Navigational Charts, traditional paper charts and Raster Nautical Charts.
- **Hydrographic Surveys** – This unit manages the NOAA hydrographic fleet and \$31 million in contract acquisition of hydrographic data with multibeam and side scan sonar, primarily in the 500,000 square nautical miles of navigationally significant U.S. waters. These hydrographic surveys provide the most basic depth and hazardous obstruction data for the production of nautical charts and for other applications such as storm surge, circulation/forecast and tsunami models, fisheries management, coastal zone land use, and spatial planning. Concurrent with data collection, the program ensures that physical scientists maintain sufficient hydrographic expertise to oversee contracts, develop specifications, interact with the International Hydrographic Organization and other nations, interface with other government agencies, and conduct all hydrographic survey work mandated by Congress.
- **Research and Development** – Coast Survey continually tests and evaluates new cartographic, hydrographic, and oceanographic systems in order to advance the science and processes used by NOAA for safe, efficient navigation and the utilization and protection of the coast. The program develops techniques and methods for the modeling, analysis, simulation and accurate real-time prediction of oceanographic, atmospheric and water quality parameters. Specific projects include the National Vertical Datum Transformation tool, or VDatum; Autonomous Underwater Vehicle survey technology; and coastal/ocean forecast models. NOAA's Joint Hydrographic Center (JHC) evaluates sonar technologies and processes to improve efficiencies in hydrographic data acquisition. JHC is also supporting the data collection and analysis necessary to support delimitation of the U.S. Extended Continental Shelf for a claim under the United Nations Convention on the Law of the Sea (UNCLOS).
- **Navigation Services** - The program has built in an outreach mechanism to interact directly with customers and stakeholders via Regional Navigation Managers on charting issues and Marine Transportation System infrastructure improvements. This feedback loop improves NOAA's response to charting and navigation questions and serves as a means to educate constituents on emerging charting technologies and their uses. In addition, seven Navigation Response Teams perform rapid response surveys after maritime emergencies or natural disasters to keep commerce moving.
- **Coastal Mapping** – The Mapping and Charting program defines the official 95,000 miles of U.S. shoreline that serve as the critical baseline for defining America's marine territorial limits, including its EEZ. The national shoreline is an essential data layer for nautical charts, and for the geographic reference needed to manage coastal resources, conduct marine spatial planning, mitigate and adapt to climate change, support Homeland Security, and many other uses. Shoreline is delineated by processing stereo aerial photographs and high resolution satellite imagery. In addition, the program conducts research into new technologies including Light Detection and Ranging (LiDAR) and Hyperspectral imaging. The program uses both contractors and in-house resources to collect and process shoreline data.

Schedule & Milestones:

Performance Schedule	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Build and maintain Electronic Navigational Charts (ENCs) for a total of 1025 available to public	800	850	910	1,025	1,025	1,025
Reduce the survey backlog within navigationally significant areas (SNM)	3,200	3,250	3,250	3,250	3,250	3,250

Deliverables:

- VDatum models implemented along the entire contiguous U.S. coastline, enabling seamless integration of land and water information
- Complete suite of Electronic Navigational Charts (ENCs) available to the public along with paper/raster chart options made possible by the programs single chart production system
- Production and maintenance of a wide variety of products and services such as nautical chart updates and nowcast/forecast models
- Hydrographic survey backlog reduced by 16,250 snm (3,250 snm per year) within navigationally significant areas
- 500 new editions of Raster Navigational Charts
- 875 hydrographic surveys conducted and approved by NOAA survey units, contractors, and other sources for nautical charting
- ENCs validated in 65 ports by NOAA Navigation Response Teams (NRTs)
- New editions of Coast Pilot published at a rate of eight per year
- nowCOAST GIS web mapping portal enhanced to meet requirements of partners in several collaborative projects and other nowCOAST users, and data dissemination improved to address regional needs for data access
- Improved efficiency and accuracy of hydrographic surveys by surveying on the ellipsoid, eliminating the need for time-consuming activities such as tide gauge installations, vessel settlement and squat corrections, and inefficient post-survey-processing

Performance Goals and Measurement Data

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Percentage of priority seaports in Alaska with access to the VDatum tool	0%	0%	0%	22%	33%	33%
Description: The percentage of priority seaports in Alaska with access to the VDatum tool is one of the metrics for NOAA's Navigation Services programs, typically used to capture annual performance of NOAA available resources to increase the percent of seaports with access to a tool capable of transforming bathymetry and topography between 28 different vertical datums.						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Percentage of top US Seaports with access to suite of NOAA Navigation Products and Services (ENCs, NRTs, access to VDatum across Nation excl AK/HI)	76%	80%	82%	83%	84%	84%
Description: The U.S. Army Corps of Engineers tracks the number of vessel transits and cargo tonnage that pass through the 300 or so ports in the U.S. on an annual basis. Over 95 percent of the annual tonnage passes through the top 175 seaports. By tracking how many seaports to whom NOAA is providing a full suite of its products and services, one can determine what percentage of cargo is transiting more safely and efficiently. The percentage of seaports can then be correlated with these statistics.						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Reduce the hydrographic survey backlog within navigationally significant areas – Measure 18f	3,200	3,250	3,250	3,250	3,250	3,250

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Update National Shoreline and Priority Ports (Percentage of total per year)	3.2% / 12%	3.2% / 12%	3.2% / 12%	3.2% / 12%	3.2% / 12%	3.2% / 12%
Description: Updating the National Shoreline and Priority Ports is a measure NOAA typically uses to capture annual performance of NOAA in-house and contract assets for acquiring shoreline data for navigation safety and other programs.						

GEODESY (<http://geodesy.noaa.gov/>)

The Geodesy program provides a common reference framework, the National Spatial Reference System (NSRS), for establishing the coordinate positions of all geographic and geospatial data. The NSRS is the national coordinate system that specifies latitude, longitude, height, scale, gravity, and orientation throughout the Nation. NSRS provides the critical positioning framework for transportation; mapping and charting; and a multitude of scientific and engineering applications, and is an essential component of all national observing systems. The NSRS must continually evolve to meet the growing demand for more accurate, timely, and consistent positioning services. To accomplish its mission, the Geodesy program defines, maintains and provides access to the NSRS to meet our Nation's economic, social, and environmental needs. Geodesy activities occur in all 50 states and many U.S. territories. The Geodesy program is implemented by NOAA's National Geodetic Survey (NGS) program office.

The Geodesy program can be grouped into five major overlapping elements:

- **Passive Network Infrastructure Support** - A major component of NSRS is a network of over one million permanently marked reference points including the Federal Base Network (FBN), the Cooperative Base Network (CBN), and the User Densification Network (UDN). These monuments form a crucial foundation for all geographically referenced activities conducted in the United States.
- **Continuously Operating Reference Stations (CORS) support** - NGS manages a National CORS Network of permanently operating GPS receivers that includes a highly accurate

receiver that continuously collects radio signals broadcast by Global Navigation Satellite System (GNSS) satellites. NGS provides access to GPS data from this network free of charge via the Internet. The CORS system enables positioning accuracies that approach a few centimeters relative to the NSRS.

- **Height Modernization** - Height Modernization is an NGS-led effort to enhance the vertical aspect of the NSRS through the establishment of accurate, reliable and consistent heights at the local level. As part of this effort, NGS is conducting a multi-year effort to collect airborne gravity data and update the Nation's gravity-based geoid model through its Gravity for the Re-Definition of the American Vertical Datum (GRAV-D) initiative. This is essential for developing a new national vertical datum allowing GPS to efficiently establish accurate elevations for all types of positioning and navigational needs. Because GRAV-D will take a number of years to complete, on-going height modernization efforts are also focusing on integrating GPS technology with existing survey techniques in areas of the country that have critical, urgent and compelling needs and cannot wait for the establishment of a new national vertical datum through GRAV-D.
- **Data Access and Capacity Building** - NGS archives and provides access to geodetic control, shoreline, and aeronautical survey data from its own surveys and from cooperating organizations. These data are made available via the Internet. As part of its technology transfer efforts, NGS conducts a series of workshops and constituent forums around the country. NGS also manages the State Geodetic Advisor Program, a cost-shared program that provides a liaison between NOAA and the host state to guide and assist the state's geodetic and surveying programs. Thirty-four states, the District of Columbia, and Puerto Rico are currently covered under the advisor program.
- **Research, Tool and Model Development** - NGS develops standards, specifications, guidelines, and best practices for the surveying and positioning industry, as well as a variety of models and programs describing geophysical and atmospheric phenomena that affect spatial measurements. These tools and models are crucial to scientific and commercial positioning activities. To accomplish its mission, NGS also conducts cutting-edge research and development in geophysics, including geodynamics and geodesy. The goal of this research is to improve the collection, distribution, and use of spatial data. Current research interests include improving accuracies and precision of geodetic positions/velocities, automated processing of GPS data for static and/or kinematic positioning, orbital dynamics, sea level rise, crustal motion, GPS antenna characteristics, meteorological effects, and tidal effects.

NOAA's Geodesy program has grown out of a 200-year old requirement to provide the Nation with geodetic and geographic positioning services. A 2009 socioeconomic study estimated that the NSRS provides more than \$2.4 billion in potential annual benefits to the U.S. economy. The study found that the NOAA CORS network alone provides an estimated \$758 million per year in benefits. The study estimated that an additional \$522 million in annual economic benefits could be generated by the implementation of a new vertical reference system through GRAV-D, allowing users to determine more precise elevations using the Global Positioning System (GPS), with approximately \$240 million saved from improved floodplain management alone (*Socio-Economic Benefits Study: Scoping the Value of CORS and GRAV-D*, Levenson 2009).

Schedule & Milestones:

- Establish and publish the geoid theory necessary to achieve < 1 cm absolute accuracy, for all non-mountainous regions of the United States, allowing for rock density unknowns in the mountains, and with unknowns not exceeding 1cm at the coast (FY 2012)

- Update orbital software to calculate GPS and GNSS orbits to within 1cm absolute accuracy (FY 2012)
- Install three foundation CORS sites for the improvement of the International Terrestrial Reference Frame (ITRF) (FY 2013)
- Compute Prototype North American Gravimetric Geoid (FY 2013)
- Complete term as International GNSS Service (IGS) Analysis Center Coordinator (FY 2013)
- Develop and test standards, specifications, and workflows for new coastal geospatial products, including orthomosaics and lidar data (FY 2013)
- Create models to predict the 3-D crustal velocity at any location in the United States (FY 2013)
- Ninety percent of U.S. counties rated as fully enabled or substantially enabled with accurate positioning capacity (FY 2014)
- Complete two-thirds of all GRAV-D (Gravity for the Redefinition of the American Vertical Datum) areas (FY 2017)

Deliverables:

- Manage, maintain, interpret, certify, and disseminate geodetic information
- Act as the Federal geodetic control theme lead and define, maintain and provide access to the National Spatial Reference System as the fundamental geodetic control for the United States
- Develop Federal geodetic standards, specifications, and guidelines, participate in development of international geodetic policy, standards, and guidelines and participate in the development of GPS and other global navigation satellite system policy to the extent it relates to the NSRS
- Provide positioning instrument testing and calibration services to ensure accurate implementation of NSRS
- Develop publicly accessible models and tools relating spatial datums and describing geophysical, atmospheric, equipment, and GPS orbit phenomena impacting accurate spatial measurement
- Enhance GPS augmentation by managing, monitoring, and providing access to the CORS Networks, in support of civil positioning and the U.S. transportation infrastructure
- Conduct geodetic control surveys
- Conduct GPS satellite orbit analysis and act as the International GNSS Service (IGS) Analysis Center Coordinator to pinpoint the locations of more than 40 GPS and GNSS satellites to ensure the accuracy of satellite-delivered positioning information
- Install “foundation” CORS sites tied to the International Terrestrial Reference Frame (ITRF) in order to improve forecasting absolute global sea level rise on the order of millimeters per year and necessary to inform coastal management and construction project planning

Performance Goals and Measurement Data

Performance Measure:	FY	FY	FY	FY	FY	FY
Percentage of U.S. counties rated as fully enabled or substantially enabled with accurate positioning capacity - Measure 18g	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	83%	86%	89%	n/a*	n/a*	n/a*

* Current measure is expected to be replaced by FY 2014 with the measure below.

Performance Measure:	FY	FY	FY	FY	FY	FY
Percent Progress toward a New National Vertical Datum (Proposed Replacement Measure)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	15%	25%	35%	45%	55%	65%
Description: An updated geoid model will dramatically improve elevations and height information in at-risk coastal areas and other parts of the country as the foundation for improved commerce, economic efficiencies, and to better protect against inundation from storms, flooding, and sea level rise. This measure tracks progress towards the redefinition of the American Vertical Datum.						

TIDE AND CURRENTS (<http://tidesandcurrents.noaa.gov/>)

The Tide and Current Data Program (TCDP) is an essential component of the integrated, comprehensive suite of NOAA information products required by the maritime community to ensure safe and efficient navigation. The TCDP provides the foundational reference framework for coastal (tidal datums) and Great Lakes (International Great Lakes Datum) water levels as well as tide and tidal current predictions. This reference framework enables the production of nautical charts and delineation of shoreline, the demarcation of marine boundaries ranging from international to private property, the monitoring of local sea level trends for long term climate records, and effective coastal and marine spatial planning. The Coast and Geodetic Survey Act of 1947 (61 STAT 787, 33 U.S.C. §§ 883 a-f) authorizes collection and dissemination of water level data; Section 883a authorizes NOAA to conduct "Hydrographic ... tide and current observations"; Section 883b authorizes NOAA "to analyze and predict tide and current data, and process and publish data, information, compilations, and reports." The Hydrographic Services Improvement Act (112 STAT 3454, 33 U.S.C. §§ 892 et seq) provided updated authorities for the provision of real time information and the use of information for coastal resource management. Other acts, such as the Tsunami Warning and Education Act (120 STAT 2902, 33U.S.C. Ch. 45) authorizes the use of real time tide data for tsunami warnings. The TCDP is an end-to-end program managed by the NOS Center for Operational Oceanographic Products and Services (CO-OPS). CO-OPS accomplishes its mission consistent with international standards and basic approaches utilized by other countries and entities seeking to provide similar geospatial reference systems and data. Observations, predictions, forecasts and other water level and current products and services are generated and distributed to the marine transportation community and other users. A Customer Satisfaction survey was performed in 2009 on CO-OPS products and services to measure customer satisfaction with current products and services and gain insight for future areas of focus. CO-OPS scored significantly higher on the American Customer Satisfaction Index (ACSI) metric (score of 82) than other Federal government agencies.

The Tide and Current Data Line Item is composed of four primary program elements described below:

- **National Water Level Program** – CO-OPS operates and maintains the National Water Level Observation Network (NWLON), a system of over 200 observation stations located in U.S. coastal areas, the Great Lakes, and U.S. Territories and possessions. Information from the NWLON ranges from the high frequency (real time) content in the record (e.g., tsunamis and storm surge) to the long-term content (e.g., sea level and lake level trends). NWLON provides vertical reference datums for all marine boundary applications; national shoreline and nautical chart products; coastal project planning and construction; dredging; habitat restoration projects; and hurricane evacuation route planning. The program also defines and provides local mean sea level trends essential to coastal community and project planning that must incorporate sea level rise guidance. The multi-mission NWLON also provides real time data for safe and efficient navigation, improved hazmat and emergency response, storm surge and tsunami warnings, and other applications. CO-OPS conducts a collaborative program across several NOS offices known as Coastal Oceanographic Applications and Services of Tides And Lakes (COASTAL) that focuses on non-navigation applications of CO-OPS, NGS and OCS data for such applications as beneficial uses of dredged material, coastal planning projects, marsh restoration projects, long-term sea-level assessments, storm-surge monitoring, emergency preparedness, and HAZMAT response. In FY 2009, the NWLON expanded to five additional locations in the Gulf and Alaskan regions, bringing the total number of NWLON stations to 210. Efforts to strengthen stations against extreme weather events to ensure data is available when most needed continued with eight stations being hardened. Thirty NWLON stations were also upgraded with meteorological sensors to better serve navigation customers as well as local National Weather Service Forecast Offices. CO-OPS Sea Levels Online website was enhanced by updating linear sea level trends for 128 NOAA/CO-OPS long-term water level stations along with their 95 percent confidence intervals. Sea level trends were calculated for 70 new global stations to bring the number of global stations presented to 114. In FY 2010, CO-OPS completed the hardening of six NWLON stations against extreme events and upgraded an additional 25 stations with meteorological sensors.
- **National Current Program** – CO-OPS conducts short term tidal current surveys primarily to update the NOAA annual tidal current prediction tables. NOAA's tidal current prediction tables are used by the largest ship operators, as well as the fishing industry, recreational boaters, kayakers, and wind surfers. U.S. Coast Guard carriage regulations require large commercial vessels to carry NOAA's annual Tide and Tidal Current Prediction tables along with Nautical Charts for safety. Updated, accurate predictions are essential for these users to support safe and efficient navigation and for fishers to determine best catch times. Accurate measurements of the currents are essential to test oil spill response strategies and provide onsite response to an emergency spill. The data are used to fine tune strategies and verify current trajectories for models. Tidal currents are also used to assess and help site alternative renewable energy projects tapping into hydrokinetic energy sources such as currents, tides and waves. In FY 2009, CO-OPS conducted tidal current surveys in Alaska, Massachusetts and Florida to update tidal current predictions at over 70 locations. In FY 2010, tidal current surveys were conducted in Alaska and in the Long Island Sound.
- **Physical Oceanographic Real Time Systems (PORTS®)** - PORTS® is a decision support tool that integrates and disseminates real-time environmental observations, forecasts and other geospatial information. In partnership with local port authorities, pilot associations, shippers, the U.S. Coast Guard, the U.S. Army Corps of Engineers, the U.S. Navy,

academia, and others, PORTS[®] has been implemented in various bays and harbors in the U.S. to measure and disseminate water levels, currents, salinity, winds, and atmospheric pressure to various users. PORTS[®] is a cost-shared program requiring local partners to provide funding for the cost of installation, operation and maintenance of the sensor systems. NOAA's responsibility is to provide the technical expertise required to design the systems and provide ongoing management of the data. PORTS[®] builds on CO-OPS water levels and currents program expertise as well as the NWLON observing system infrastructure. PORTS[®] observations support many mission requirements within NOAA and other Federal agencies. In FY 2009, two new PORTS[®] were established and brought on line in Lake Charles and New Orleans, Louisiana, bringing the total number of PORTS[®] to 20. In FY 2010, a new PORTS[®] was established in New London, CT. In addition, a new PORTS[®] economic study was published in June 2010 for the Columbia River PORTS[®], a new visibility sensor transitioned into operations, and wave data collected by the US Army Corps of Engineers was integrated into PORTS[®], meeting PORTS[®] users two highest priorities for additional environmental parameters. Real time information produced by NOAA's PORTS[®] partners provided critical input to trajectory models run by the Office of Response and Restoration to forecast movement of oil from the Deepwater Horizon incident.

- Operational Forecast Models Program** - CO-OPS operates nowcast and forecast models that provide short term water level and other environmental forecasts accurate out to 30 hours that enable better planning and decision making, particularly for vessel transits. These are typically operated in conjunction with PORTS[®] due to the need for real time data input. CO-OPS presently operates nine nowcast/forecast models that are being transitioned to operate on the National Centers for Environmental Prediction high performance computers to improve performance through coupling with other models and leveraging the supporting infrastructure. There are nine models presently in operation. In FY 2010, a new operational forecast model was delivered at Delaware Bay and the existing Chesapeake Bay model was upgraded. A new operational forecast model for Tampa Bay is scheduled for release in FY 2011.

Schedule & Milestones:

Performance Schedule	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Maintain PORTS [®] (# of PORTS [®])*	21	21	21	21	21	21
Support hydrographic/shoreline survey projects	80	80	80	80	80	80
Operational Forecast Models	13	15	17	19	20	20

* Number of new PORTS[®] cannot be projected due to cost-share nature of program

Deliverables:

- 66 percent of national reference framework (tidal and International Great Lake datums) necessary for nautical charting and shoreline surveying, marine boundaries, habitat restoration, dredging, coastal construction projects, and effective coastal and marine spatial planning
- Tidal zoning, tidal correctors, smooth tides and other tidal information required for reduction of hydrographic soundings to nautical chart datum and for tidal control of shoreline surveys
- Legal authority for definition of local mean sea level, long term sea level trends, guidance for consistent incorporation of sea level trends into interagency planning guidance

- Continuous accurate, reliable, and timely quality controlled real time data from over 2,000 oceanographic and meteorological sensors to support safe and efficient navigation, hazmat response, emergency response planning and execution, NWS tsunami and storm surge warnings, and dredging
- Tide and tidal current predictions updated annually at approximately 6,000 locations, and nowcast/forecast oceanographic and meteorological parameters for safe and efficient navigation and coastal resource management

Performance Goals and Measurement Data

Performance Measure:	FY	FY	FY	FY	FY	FY
Percentage of top 175 US Seaports with access to suite of NOAA Navigation Products and Services (CO-OPS contribution by tonnage)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	55%	55%	55%	55%	55%	55%
Description: The U.S. Army Corps of Engineers tracks the number of vessel transits and cargo tonnage that pass through the 300 or so ports in the U.S. on an annual basis. Over 95 percent of the annual tonnage passes through the top 175 seaports. By tracking how many seaports to whom NOAA is providing a full suite of its products and services, one can determine what percentage of cargo is transiting more safely and efficiently. The percentage of seaports can then be correlated with these statistics.						

Performance Measure:	FY	FY	FY	FY	FY	FY
Percentage of U.S. coastline with accurate vertical control (tidal and geodetic)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	8%	8%	8%	8%	8%	8%
Description: The Coast and Geodetic Survey Act of 1947 authorizes NOAA to conduct tide and current observations and geodetic control surveys. NOAA is the authority for providing vertical reference datums for all marine boundary applications, national shoreline, and nautical chart products. This measure tracks NOAA's ability to provide these datums by measuring the percentage of the U.S. coastline that has accurate vertical control.						

Performance Measure:	FY	FY	FY	FY	FY	FY
Update accuracy of NOAA tidal current predictions (number of locations)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	70	70	70	70	70	70
Description: The Coast and Geodetic Survey Act of 1947 authorizes NOAA to conduct tide and current observations and to analyze and predict tide and current data and publish data, information, compilations, and reports, including short term tidal current surveys that are used to update the NOAA annual tidal current prediction tables. This measure tracks NOAA's progress in updating the accuracy of these predictions by tracking the number of locations that have been updated.						

PROGRAM CHANGES FOR FY 2012:

Mapping and Charting Base: Integrated Ocean and Coastal Mapping (Base Funding: 0 FTE and \$0; Program Change: +0 FTE and +\$1,000,000): NOS requests an increase of \$1,000,000 and 0 FTE for a total of \$1,000,000 and 0 FTE to fund an Integrated Ocean and Coastal Mapping (IOCM) Data Processing Center, which maximizes mapping data collection efficiencies and the use of taxpayer dollars. The request supports implementation of the Ocean and Coastal Mapping Integration Act (OCMIA) of 2009, the National Ocean Policy goals, in particular coastal and marine spatial planning (CMSP), and other ocean and coastal economic and management activities.

Proposed Actions:

With this request, NOAA will invest in an IOCM data processing center to greatly enhance NOAA's existing, overextended hydrographic/bathymetric data processing capacity. This increase will enable NOAA to use its seafloor and water column mapping assets more efficiently in support of ocean and coastal mission requirements including conservation and management of living marine resources and habitats, economic uses such as navigation, commercial/recreational fisheries and tourism, coastal hazard resilience, climate change mitigation and adaptation strategies, and scientific research. Furthermore, Administration priorities for CMSP will require nationally consistent, derived data products, including habitat maps as data layers, which will become part of a framework for regional assessments and alternative future use scenarios. These IOCM investments will support this framework by addressing the obstacles currently preventing NOAA and others from collecting truly multipurpose data. Funding for this effort targets the lack of standards in data collection and processing and also expands NOAA's capacity to work with programs from the start of a survey so that the mapping work can be planned, executed and derived into products with greater utility for more purposes.

These IOCM investments are integral to the concept of "map once, use many times" and are a high priority for both marine transportation and marine resource management interests. The IOCM approach is an effective use of taxpayer dollars because it increases the availability and accessibility of quality mapping data for multiple purposes. Seafloor and water column mapping data acquired by NOAA, other Federal and state agencies, and academic institutions will be sent to the IOCM Data Processing Center, to be co-located with the NOAA/University of New Hampshire Joint Hydrographic Center (JHC), in order to utilize JHC's strengths in the development of new technology and techniques for improved data processing and analysis. The Data Processing Center will develop and maintain IOCM standards, specifications and metadata standards for mapping data. The Center will accept mapping data from a variety of sources; manage these data with advanced data systems; and produce and deliver quality-assured products to support both navigation and non-navigation requirements. Data will be archived at the National Geophysical Data Center (NGDC) so that NOAA can provide universal access that would otherwise be unavailable to the broader research and resource management community, and the public.

The increase will allow NOAA's Office of Coast Survey (OCS) to demonstrate some quick wins in launching this effort by maximizing the use and reuse of mapping data. By processing, reprocessing and creating products from existing data, OCS will be able to update nautical charts, describe seafloor regions necessary for coastal and marine spatial planning, and create high resolution shoreline and new electronic navigational charts at a fraction of what it would cost to collect new data for these efforts. While the Center will be co-located with JHC, the increase is needed to: rent additional lab space; support one contractor for oversight and management; provide funding for IT contracts to complete data archiving and processing; purchase supplies and material for reprocessing; and acquire equipment.

Statement of Need and Economic Benefits:

Many Federal, state and private-sector customers rely on seafloor and water column mapping data, and demand for these data is growing exponentially. Ocean and coastal mapping is essential, but expensive. Improving capabilities for integration and data sharing provides an opportunity to meet multiple needs more efficiently. This is especially true in areas of emerging requirements like Alaska and the Arctic. OCMIA codifies collaborative approaches for Federal mapping agencies and builds on recommendations of NOAA's Hydrographic Services Review Panel Federal Advisory Committee, the National Academy of Sciences report, *A Geospatial Framework for the Coastal Zone*, and the U.S. Commission on Ocean Policy, among others. The Department of Commerce (NOAA) and Interior (U.S. Geological Survey) are the designated co-chairs of the Interagency Committee on Ocean and Coastal Mapping.

If collected and processed to specifications that can support multiple uses, seafloor and water column data will enable a "whole ocean" approach to management supporting such important activities as coastal and marine spatial planning, climate adaptation and mitigation strategies, fishery and protected species management, offshore renewable energy siting, homeland security, storm surge/tsunami readiness, oil spill response, and coastal zone and emergency planning. NOAA's primary center of seafloor mapping expertise – the hydrographic surveying program – is overwhelmed by requests for mapping support (data acquisition and processing), and as NOAA equips its new vessels with multibeam sonar systems, the data management challenges are compounding. Recent experiences with the new multibeam systems on NOAA's new fisheries survey vessels have shown that training, expertise and technical support are required to fully utilize these state-of-the-art systems for mapping bathymetry, seafloor habitat, and fish populations. The IOCM Data Processing Center will provide this support and optimize the data that is collected. Without this funding, the roughly \$1M investment in each of these systems will not be able to be leveraged for multipurpose data collection.

Resourcing OCMIA's mandates will allow NOAA to execute the coordination needed, provide the needed technical support, reduce the potential for duplication of effort, and directly target currently unrealized efficiencies that can be gained by multi-use data and collaborative mapping efforts, particularly in challenging areas like the Arctic and Alaska. NOAA has identified several existing data sets, in addition to data that will become available on a recurring basis, as the initial sets for processing by the IOCM Data Processing Center (see deliverables below). These initial data sets encompass 374,000 square nautical miles (SNM) of seafloor and cost over \$380 million to acquire. Once reprocessed, they can be used for purposes other than those for which they were initially collected. For example, data collected by NOAA to update nautical charts can be reprocessed to support the development of benthic habitat maps or data collected by the Army Corps of Engineers to support sediment transport and sand delivery modeling can be used to support nautical charting. Additional uses of these data include: developing or improving storm surge/inundation models, evaluating potential ocean energy sites, developing geo-hazard maps and improving our understanding of tsunami potential, assisting in the designation and design of marine protected areas, and supporting other coastal and marine spatial planning activities. Once the IOCM Data Processing Center is established, additional data sets will be identified and reviewed for processing.

Two recent proof-of-concept projects in 2008 and 2009 illustrate the concept and cost savings. In Kachemak Bay, Alaska, NOAA and the state partnered to use NOAA ship time to collect both hydrographic data for navigation and acoustic backscatter for Alaska Department of Fish and Game habitat needs. Another good example is the \$14.5 million cost-share partnership with California to survey the state's coastal waters in support of conservation and climate adaptation needs, as well as navigation. Existing datasets can also be re-processed to standards appropriate for both charting

and habitat mapping, including \$40 million of recently collected mapping data, but the NOAA hydrographic program simply cannot currently ingest it all to leverage it for both charting and the many other requirements for mapping data. For every SNM of seafloor mapping data processed to support multiple needs, a minimum cost savings of 100 percent in data acquisition cost is realized. At a cost of \$5300/SNM of seafloor data acquired in support of the California partnership, the State and NOAA realized an overall cost savings of \$14.5 million, the cost to re-survey this area had the partnership not evolved. The cost to acquire similar data in nearshore areas can be as much as four times more expensive. Without this IOCM investment, thousands of SNM of data previously acquired in coastal waters for non-navigation purposes will not be processed for navigation purposes and may result in a considerable investment in data re-acquisition costs.

Base Resource Assessment:

There are no base resources for this activity as it is a new initiative.

Schedule and Milestones:

- Establish and co-locate IOCM Data Processing Center with the NOAA/UNH Joint Hydrographic Center (FY 2012)
- Develop and maintain IOCM standards/specs/metadata for mapping data (FY 2012+)
- Accept/process data, deliver products to OCM programs, archive at NGDC (FY 2012+)
- Implement standard file format access to NOAA data (Bathymetry Attributed Grid (BAG), multibeam surveys, sidescan sonar) providing customary and standard products that would otherwise be unavailable (FY 2012+)
- Implement data archive capability for NOAA charter mapping data from University-National Oceanographic Laboratory System (UNOLS) projects (FY 2013+)

Deliverables:

- The IOCM Processing Center will begin ingesting existing data sets from a variety of sources for processing to standards appropriate for both charting and habitat mapping, including \$40 million of recently collected data across NOAA:
 - 885 square nautical miles of Gulf of Maine seafloor mapping
 - Gulf of Mexico marine debris mapping data
 - NOAA-acquired multibeam surveys in the U.S. Pacific Islands, including Papahānaumokuākea Marine National Monument
 - Extended continental shelf mapping data supporting U.S. delimitation under Law of the Sea
- Develop and sustain data standards, tools and expertise and provide guidance on acquisition and processing in support of the OCM community.
- Develop acoustic backscatter collection protocols that will facilitate the acquisition of these valuable data while maintaining the quality of bathymetry data.

NGDC will:

- Develop automated extraction of standard products from new hydrographic source data in Bathymetry Attributed Grid (BAG) format including the preservation of accuracy uncertainty attributes.
- Provide access to integrated hydrographic and derived science products through standard web services.
- Enhance metadata to improve discovery/use of NOAA hydrographic data, and to improve IOCM planning and coordination.

Performance Goals and Measurement Data

Performance Measure Reduce the Hydrographic Survey Backlog within Navigationally Significant Areas (Square Nautical Miles - SNM) Measure 18f	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	N/A	3,490	3,720	3,920	4,120	4,300
Without Increase	3,200	3,250	3,250	3,250	3,250	3,250
Description: NOAA estimates that a portion of the data re-processed by the center will contribute to surveys in navigationally significant areas and count toward this measure.						

Performance Measure: Multibeam sonar data reprocessed for use in fisheries management (SNM)	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	N/A	700	875	1,340	1,340	1,400
Without Increase	0	0	0	0	0	0
Description: This measure tracks the re-processing of data collected by NOS for nautical charting for use in NMFS ecosystem assessments and habitat characterizations. An IOCM Center would re-process multi-beam data, data that will contribute geospatial information on the physical and geological components of the ocean environment, and is, therefore, a necessary component of habitat characterization and assessment. This effort would increase the amount of data available for fisheries management to improve the scientific basis for decisions.						

Performance Measure: Initial datasets processed for IOCM seafloor/water column mapping data products (annual SNM)	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	N/A	6,190	17,100	22,800	37,000	47,950
Without Increase	100	100	100	100	100	100
Description: This measure highlights existing datasets that the IOCM center can focus on re-processing in addition to the above two measures. The metric illustrates the large quantities of data available but not accessible for multiple uses. These datasets were collected for a single purpose, but with some assistance can be rendered more useful to other purposes such as CMSP, habitat mapping, tsunami and storm surge models, and nautical chart updates in areas less critical for navigation than above.						

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Subactivity: Navigation Services

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	40
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	60
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	650
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	100
31 Equipment	150
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>1,000</u>

Mapping and Charting Base: Development and Demonstration of Unmanned Surface Vehicles (Base Funding: 0 FTE and \$750,000; Program Change: -0 FTE and -\$750,000):

NOAA requests a decrease of \$750,000 and 0 FTE for a total of \$0 and 0 FTE. In the Consolidated Appropriations Act, 2010, Congress provided \$750,000 for NOAA to develop and demonstrate the potential use of unmanned surface vehicles (USVs) for hydrographic survey operations. In FY 2010, NOAA applied this funding towards a contract with the Department of Defense (DOD) Naval Sea Systems Command, Naval Surface Warfare Center (as intended by Congress) to develop an MOA with that office to: develop the concept of operations (CONOPS) and detailed requirements for integrating USVs into NOAA's existing hydrographic survey operations, and to develop and perform a proof-of-concept demonstration at sea of a prototype USV system based upon the developed CONOPS and technical requirements. A NOAA vessel will be used for the demonstration. This additional funding is not required in FY 2012. NOAA has not planned for transition of this technology in the short term (three years), as it is still very much in the research and development phase.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Subactivity: Navigation Services

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	(750)
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(750)

Regional Geospatial Modeling Grants (Base Funding: 0 FTE and \$5,500,000; Program Change: -0 FTE and -\$5,500,000): NOAA requests a decrease of \$5,500,000 and 0 FTE for a total of \$0 and 0 FTE. In the Consolidated Appropriations Act, 2010, Congress provided funds for projects supported by Regional Geospatial Modeling Grants. Grants were awarded in FY 2010 with this funding and no additional funding is needed for these projects. Base funding from the Coastal Services Center and Geodesy Program will support core mission activities including a Passive Network Infrastructure support, Continuously Operating Reference Stations (CORS) support, Height Modernization, data access and capacity building, research, and tool and model development. NOAA will also continue to work with states and across Federal agencies to provide geospatial data and tools, training, social science information, and partnership-building at the national, regional and state levels that would otherwise be unavailable. In addition, the President's FY 2012 Request includes an additional \$2 million to develop a national integrated high-resolution topographic and bathymetric dataset to address a range of high priority coastal issues.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service

Subactivity: Navigation Services

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(5,500)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(5,500)</u>

Tides and Currents (Base Funding: 124 FTE and \$33,779,000; Program Change: -0 FTE and -\$4,800,000): NOAA requests a decrease of \$4,800,000 and 0 FTE for a total of \$28,979,000 and 124 FTE for Tides and Currents base funding.

Proposed Actions:

NOAA requests a decrease in the Tides and Currents Base of \$600,000 to reflect the completion of the installation of meteorological sensors (wind speed/direction, air temperature and barometric pressure) at National Water Level Observation Network (NWLON) stations, a decrease of \$400,000 from funding used for the “hardening” of NWLON stations damaged by recent hurricanes, and a decrease of \$3,800,000 for the design, installation, maintenance, and operations of the Physical Oceanographic Real-Time System (PORTS[®]). In the Consolidated Appropriations Act, 2010, Congress provided additional funds for NOAA to fully support the design, installation, maintenance, and operations of the entire PORTS[®] systems. PORTS[®] have traditionally been a cost-share between the local port and NOAA – each funding specific responsibilities. NOAA believes that this is the appropriate funding model and for FY 2012 proposes to return to the cost-share model.

Statement of Need and Economic Benefits:

The Tide and Current Data Program (TCDP) is an essential component of the integrated, comprehensive suite of NOAA information products required by the maritime community to ensure safe and efficient navigation, support homeland security, improve oil and other hazardous material spill response, and support coastal resource management. The U.S. Coast and Geodetic Survey Act of 1947 mandates that NOAA collect tide and current data to support safe and efficient marine navigation. The Hydrographic Services Improvement Act of 1998 recognized technological advances in the TDCP by authorizing the provision of real time data for navigation safety and efficiency.

The Nation’s commerce, which passes through our seaports, is an economic lifeline of our country and vital to the economic well being of our Nation. More than 78 percent of U.S. overseas trade by volume and 43.5 percent by value, including nine million barrels of imported oil daily, transits through our seaports. (2003 Pocket Guide to Transportation Table 5-5, U.S. Department of Transportation.) The “*National Strategy for the Marine Transportation System: A Framework for Action*,” published by the Cabinet level Committee on the Marine Transportation System in 2008, found that real-time environmental observations for weather, tides, and currents enhance mariner situational awareness, but are not currently available in all critical areas of the MTS. Mariners need a complete understanding of the physical environment in which they operate, including both oceanographic and meteorological information. Meteorological data such as wind speed and direction are critical to the safe maneuvering of large commercial vessels within constrained harbors and shipping channels. The economic and environmental consequences of a marine accident, particularly when hazardous materials are spilled, can run into the millions or even billions of dollars. This same physical environmental data can also be crucial when extreme weather and water events such as hurricanes, tsunamis, nor’easters, etc. impact U.S. coasts. Forecast models in particular rely upon real time information to inform and validate model results. Accurate real time storm tide and associated meteorological data improve National Weather Service (NWS) marine surface weather analyses and local models, improve the accuracy of marine weather forecasts and warnings, and support weather forecast verification activities. Over time, the NWS and other partners have funded the addition of meteorological sensors at approximately 80 NWLON stations as a cost effective approach to obtain more coastal observations. In FY 2008, the President’s Budget requested funds to systematically and cost effectively complete optimizing the NWLON with the installation of these sensors at the remaining stations. As demonstrated by the devastating impacts of

Hurricanes Katrina and Rita in 2005, and Ike and Gustav in 2008, coastal communities need improved, robust products and services to help them plan for, respond to, and recover from coastal storms. Faced with increasing vulnerability of coastal communities, coastal and emergency managers have a need for comprehensive, timely and accessible information to aid in making decisions at critical times.

PORTS[®] is a cost shared partnership where the local partner funds the installation and local operation and maintenance costs. NOAA's base funds for PORTS[®] are used to provide technical expertise for PORTS[®] design, continuous quality control, research and development for technology infusion, national standards, and data processing and management. NOAA-sponsored economic studies at four PORTS[®] locations have documented over a 50 percent reduction in groundings and economic benefits of up to \$18 million annually at Houston-Galveston alone. The 20 existing PORTS[®] are: Tampa Bay, New York/New Jersey, San Francisco, Chesapeake Bay, Narragansett Bay, Long Beach/Los Angeles, Houston-Galveston, Delaware Bay, New Haven, Tacoma, Soo Locks, Anchorage, Columbia River, Mobile, AL, Pascagoula, MS, Gulfport, MS, Sabine, TX, Cherry Point, WA, New Orleans, LA, and Lake Charles, LA.

Base Resource Assessment:

The base resources for this activity are described in the Navigation Services base narrative.

Schedule and Milestones:

None

Deliverables:

- Continue maintenance on meteorological sensors on NWLON stations.
- Continue design, installation, maintenance, and operations of PORTS[®]

Performance Goals and Measurement Data

Performance Measure:	FY	FY	FY	FY	FY	FY
Number of NWLON stations providing real time meteorological data that are fully operational	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Decrease	170	170	TBD	TBD	TBD	TBD
Without Decrease	170	170	170	170	170	170
Description: This measure reflects the completion of the installation of meteorological sensors at 170 NWLON stations. Ongoing maintenance is necessary to ensure that these stations retain their ability to provide real time meteorological data.						

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service

Subactivity: Navigation Services

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(4,800)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(4,800)

APPROPRIATION: OPERATIONS, RESEARCH AND FACILITIES
SUBACTIVITY: OCEAN RESOURCES CONSERVATION AND ASSESSMENT

The objectives of the Ocean Resources Conservation and Assessment subactivity are to:

- Establish the framework through which the authorities of Federal and state agencies are focused to protect and restore coastal resources.
- Recommend management actions to minimize the cumulative effects of coastal development on natural resources, especially NOAA's trust resources.
- Conduct research to define the nature and extent of human activities and conditions that threaten the health and productivity of the Nation's coastal resources.
- Conduct damage assessments to support negotiated settlements and litigation for recovering funds for restoration of injuries to NOAA's trust resources.
- Apply scientific expertise to mitigate the effects of human activities and facilitate environmental recovery, and undertake actions to restore ecosystem functions and resource values.
- Facilitate and support resource conservation through sound science and management activities.
- Develop a capability to research, monitor, assess, and predict coastal ecosystem structure and function to detect changes, evaluate management strategies, and identify actions to effectively manage threats to ecosystem health.
- Provide continuous, integrated data on our open oceans, coastal waters, and Great Lakes in the formats and at the rates and scales required to support the information needs of government, environmental managers, scientists, business, and the public.
- Develop means for valuing non-market ecological resources and clarify the causes and significance of ecosystem changes.
- Facilitate the development and transfer of tools and technology that provide more effective mechanisms to conserve, protect, restore, and utilize coastal ecosystems.
- Build the capacity of coastal decision makers to minimize environmental, social, and economic impacts from coastal and climate hazards to their communities.
- Improve public understanding of functions and values of coastal ecosystems and enhance public access to information on coastal environmental quality and health risks from pollutants.
- Support NOAA's and the Nation's obligations under international treaties and conventions, and increase effectiveness of international programs for coastal environmental science and technology, integrated coastal zone management, and sustainability of coastal resources.

This subactivity contains programs managed by the National Centers for Coastal Ocean Science (NCCOS), the Office of Response and Restoration (ORR), the Coastal Services Center (CSC), the Office of Ocean and Coastal Resource Management (OCRM), and the NOAA Integrated Ocean Observing System (IOOS) Program. The objectives of this subactivity are implemented under the authorities established in the Integrated Coastal and Ocean Observation Systems Act; Clean Water Act; Coastal Zone Management Act (CZMA); Oil Pollution Act (OPA); Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA/Superfund); National Coastal Monitoring Act (NCMA); Harmful Algal Bloom and Hypoxia Research and Control Act (HABHRCA); Estuaries Restoration Act (ERA); Coral Reef Conservation Act (CRCA); Oceans and Human Health Act (OHHA); Marine Debris Research, Prevention, and Reduction Act (MDRPRA); and other legislation to protect, conserve, and restore natural resources and the environmental quality of the Nation's coastal ecosystems.

The Ocean Resources Conservation and Assessment subactivity contains three items: Ocean Assessment Program, Response and Restoration, and National Centers for Coastal Ocean Science.

OCEAN ASSESSMENT PROGRAM

NOAA's National Ocean Service (NOS) promotes healthy coastal ecosystems by ensuring that economic development in United States coastal areas is managed in ways that maintain biodiversity and long-term productivity necessary for sustained use. Working in partnerships with Federal and state agencies, NOAA provides the coastal resource management community with the scientific understanding, information, products and services needed to balance the environmental, social, and economic goals of coastal communities and NOAA. The Ocean Assessment Program includes six sub-programs that contribute to NOAA's Healthy Oceans, Resilient Coastal Communities and Economies, Climate Adaptation and Mitigation and Weather-Ready Nation Goals.

COASTAL SERVICES CENTER (<http://csc.noaa.gov>) - The mission of the Coastal Services Center (CSC) is to build capacity for informed decision making that increases the resiliency of our coasts and coastal communities and economies. 80 percent of decisions that affect our coasts are made at the local level, and CSC's primary customers are the Nation's coastal managers, including natural resource managers, planners, and emergency officials. Working with other NOAA programs, states, and across Federal agencies, CSC provides geospatial data and tools, training, social science information, and partnership-building at the national, regional and state levels that would otherwise be unavailable. CSC is effectively "buying down" the cost of improving state and local coastal management programs and enabling a more effective and targeted implementation of the Coastal Zone Management Act (CZMA), the Ocean Research Priorities Plan's near term priority of Forecasting the Response of Coastal Ecosystems to Persistent Forcing and Extreme Events, and other relevant coastal legislation, such as the Ocean and Coastal Mapping Integration Act. Partnerships between CSC, state and local coastal management organizations give rise to numerous projects each year. CSC transfers successful tools and approaches to the coastal management community to ensure that national issues are most effectively addressed at regional, state and local levels. CSC's collaborative strategy builds effective working relationships across NOAA and with other Federal agencies.

CORAL REEF PROGRAM (<http://coralreef.noaa.gov>) - Coral reefs are some of the most biologically diverse ecosystems in the world. They provide a range of benefits, including food, recreation, marine habitat, coastal protection, and medicines and sustain American livelihoods and economic development. Coral reefs provide vital ecosystem services to coastal and insular areas including coastline protection during storms and tsunamis and productive fisheries resources and are valued between \$130,000 and \$1,200,000 per hectare. However, the health of these productive and valuable ecosystems in the U.S. and around the world is at serious risk due to a variety of human impacts, including global climate change, unsustainable fishing practices, and pollution. Nineteen percent of the world's reefs are effectively lost, 15 percent are seriously threatened with loss in the next 10-20 years, and 20 percent are under threat of loss in the next 20-40 years (Wilkinson 2008).

To address the complex nature of the threats that face coral reef ecosystems, the Coral Reef Conservation Program (CRCP) brings together expertise from across NOAA for a multidisciplinary approach to understanding and managing coral reef ecosystems. This matrix program includes more than 30 offices within NOAA from NOS, NMFS, OAR and NESS (funds are requested in NOS and then distributed among the participating offices) to meet its mission to protect, conserve and restore valuable coral reef ecosystems. NOAA has found this approach to be an efficient and effective way to mobilize and focus the specific capabilities of each office on these priorities. Examples of CRCP activities and tools include: climate forecasts developed by Coral Reef Watch (NESS), benthic habitat mapping (NOS and NMFS), baseline assessment and monitoring programs (NOS and NMFS), management capacity-building of our jurisdictional partners through training and technical assistance (NOS, NMFS, NESS), coral reef ecosystem research (OAR), and socioeconomic studies (NOS), among others.

The CRCP addresses NOAA's legislative mandates to protect and conserve coral reefs (Coral Reef Conservation Act of 2000 and the Presidential Executive Order 13089 on Coral Reef Protection, which established the NOAA-co-chaired U.S. Coral Reef Task Force), recover threatened corals and other protected species (ESA), manage reef-dependent federal fisheries and protect Essential Fish Habitat including deep coral and sponge communities (Magnuson-Stevens Fishery Conservation and Management Act (MSA)), promote sustainable use of the coastal zone under the Coastal Zone Management Act (CZMA), and improve management capabilities of the National Marine Sanctuaries (NMSA).

COASTAL STORMS (<http://csc.noaa.gov/csp/>) - The Coastal Storms Program harnesses and leverages NOAA and community resources to reduce the adverse impacts of coastal storms by developing improved and integrated products and services that address specific state/local decision-maker needs. The Coastal Storms Program brings NOAA-wide expertise, products, and services to address the challenges unique to each region and targets tools and outreach to the needs of local stakeholders. Efforts to integrate existing product service lines to meet unique needs are also included. The Coastal Storms Program is currently working in the Gulf of Mexico and Pacific Islands (Hawaii and the U.S. territories).

INTEGRATED OCEAN OBSERVING SYSTEM (<http://ioos.noaa.gov>) - The goal of U.S. IOOS is to provide continuous data on open oceans, coastal waters, and Great Lakes to inform decision-making and is mandated by Integrated Coastal and Ocean Observation System Act of 2009 (ICOOS Act). NOAA is charged with leading oversight and administration of the IOOS regional component, which complements Federal ocean observing assets by providing data, models, and information tailored to the economic and environmental requirements of local communities. NOAA is also working to ensure that Federal and regional contributions develop in a consistent and complementary manner by identifying and sharing standard procedures and integration services. IOOS implementation relies on the contributions of many programs across NOAA, the Federal government and the regions. NOAA, as the lead Federal agency, is responsible for coordinating these distributed capabilities to maximize the Nation's return on investment in IOOS. Increased compatibility of Federal and regional observing system assets will improve our understanding, forecasting, stewardship, and use of coastal waters. Base resources are allocated between two program components, NOAA IOOS and Regional IOOS. Analysis has found that researchers, modelers, forecasters, and other data users spend significant amounts of time searching for data. Users of ocean data, including modelers, and meteorologists spend an average of 25–50 percent of their time searching for, accessing, formatting, and ingesting data into their products. Significant resources are expended on data management activities that might otherwise be used to forecast and research. By improving the accessibility and interoperability of ocean data, IOOS delivers time and cost savings that can be redirected to improving existing and developing new products.

Schedule & Milestones:

Milestones for all components of the Ocean Assessment Program are provided below:

- Develop operational version of IOOS Data Catalog and web-based Viewer to allow users to find and access observational data (FY 2012)
- Support regional IOOS data standardization using DMAC standards. Make all regional IOOS data holdings discoverable through IOOS Data Catalog (FY 2012)
- Develop operational version of IOOS System Status Dashboard (FY 2013)
- Develop operational versions of Data Visualization and Format Conversion Services (FY 2013-2014)
- Develop initial versions of IOOS Product Generation and Data Integration Services (FY 2015-2016)

- Sustain observing and modeling capability throughout regional entities (FY 2012-2016)
- Develop and deliver state coastal resource and emergency manager decision support tools, such as hazard assessment tools, sea level rise visualizations, and coastal county snapshots (FY 2012-2016)
- Provide regional technical assistance, tools and coordination on priority issues to support managers in coastal regions of GOMA, MARCO, WCGA, NROC, and others (FY 2012-2016)
- Develop, distribute, update, and apply moderate resolution coastal land cover change analysis data (refreshed on five-year basis) for coastal regions (FY2012-2016)
- Develop integrated models to provide information about storm vulnerability and ecological impacts (FY 2012-2016)
- Complete coral reef jurisdictional Capacity Assessments (FY 2012)
- Develop a CRCP National Monitoring Plan (FY 2012)
- Conduct baseline assessments for priority coral marine protected areas (MPA) using the MPA Assessment Checklist (FY 2012-2013) then reevaluate these MPAs to determine improvements in management (FY 2014-2016)
- Develop five watershed management plans priority coral reef areas (FY 2012-2016)
- Conduct reef assessment and monitoring cruises in Pacific and Atlantic/Caribbean (FY 2012-2016)
- Continue to improve coral bleaching forecasts and ocean acidification models (FY 2012-2016)
- Complete the State of Coral Reef Ecosystems Report every four years (FY 2012, FY 2016)

Deliverables:

- Fully functional IOOS Data Catalog with contributions from all participating coastal, Great Lakes and open ocean data providers
- Utility services for visualizing, transforming and integrating oceanographic data
- Formal documentation for implementation and training of IOOS data providers and partners
- Standardized data access services and data formats at key NOAA and regional data providers, thereby simplifying access to new and archived oceanographic data
- New data providers and oceanographic datasets available based on customer requirements
- Refined IOOS enterprise metrics for assessing performance and maturity of the system
- Data, mapping, tools, and information resources through Digital Coast to address competing using of coastal resources and adaptation to coastal hazards and climate change
- Training and workshops on data, tools, and techniques that address competing using of coastal resources and adaptation to coastal hazards/climate change
- Effective regional ocean partnerships by building capacity through facilitation, training, and workshops addressing competing uses of coastal resources and adaptation to coastal hazards and climate change
- Outreach publications to increase capacities among coastal zone managers, land use planners, emergency management, floodplain managers, and others
- Development of environmental forecasting and risk and vulnerability decision-support tools to assist with decision making regarding the impacts of storms on natural resources and communities
- Increased management capacity and effectiveness in existing MPAs increases the condition of fish assemblages within coral reef MPAs, restores essential ecosystem functions crucial to coral health in priority coral reef areas and increases resilience of these areas to climate change impacts

- Development and implementation of watershed management plans reducing pollutant loading in target watersheds adjacent to coral reefs, thereby decreasing local stressors (sediments, nutrients, etc) that negatively affect coral reefs
- Conservation of more acres of coral reefs within U.S. boundaries through design and implementation of MPA networks
- New management strategies to better protect coral reef areas implemented through targeted research to better understand the impacts of stressors to coral reefs
- An engaged public who understands the need for and importance of coral reef ecosystems and who supports action to conserve important coral reef resources
- Reports every four years indicating the status and trends of U.S. coral reef condition

Performance Goals and Measurement Data

Performance Measure:	FY	FY	FY	FY	FY	FY
	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
Number of Regional IOOS supported coastal, ocean, and Great Lakes observations delivered to the GTS for use by NOAA operationally in daily forecasts	2.7M	1.6M	1.1M	1.1M	1.1M	1.1M
Description: Regional IOOS partners contribute a significant proportion of observations available for use by forecasters via the Global Telecommunications System. IOOS observation platforms are typically located in near shore areas where National Data Buoy Center and National Ocean Service platforms are not present, thereby filling a data gap of critical observations for NOAA.						

Performance Measure:	FY	FY	FY	FY	FY	FY
	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
Percentage of tools, technologies, and information services that are used by NOAA partners/ customers to improve ecosystem-based management - Measure 18c	87%	87%	87%	87%	87%	87%

Performance Measure:	FY	FY	FY	FY	FY	FY
	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
Percentage of U.S. coastal states and territories demonstrating 20% or more annual improvement in resilience capacity to weather and climate hazards – Measure 18e	30%	34%	36%	36%	36%	36%

RESPONSE AND RESTORATION (<http://response.restoration.noaa.gov>)

NOAA's Office of Response and Restoration (OR&R) protects coastal and marine resources, mitigates threats, reduces harm, and restores ecological function. OR&R provides comprehensive solutions to environmental hazards caused by oil, chemicals, and marine debris. NOAA responds to approximately 180 significant oil or chemical spills each year as scientific advisors to the U.S. Coast Guard and provides solutions to cleanup agencies that protect and restore coastal resources at more than 200 hazardous waste sites each year along the Nation's ocean and Great Lakes coasts. When

oil or hazardous substances threaten or injure coastal and marine resources, NOAA, along with state and other Federal natural resource trustees, is responsible for ensuring that cleanup actions protect those resources from further injury; assessing and recovering natural resource damages to restore the injured resources; and seeking compensation on behalf of the public for the loss of services that the natural resources provided. OR&R provides scientific expertise on releases of oil, chemicals, and contaminants; protecting and restoring NOAA trust resources; and extending core expertise to address critical local and regional coastal challenges.

EMERGENCY RESPONSE DIVISION - The Emergency Response Division (ERD) supports Federal, state, and local agencies across the country that depend on NOAA's science-based guidance during oil and chemical spills, vessel groundings, search and rescue efforts, national security events, and other emergencies. ERD provides scientific expertise, including oil spill trajectory modeling, shoreline cleanup assessment, identification of sensitive resources, information management, and development of cleanup strategies. ERD has extensive experience in the Incident Command System and has developed numerous spill response tools such as: the Environmental Sensitivity Index (ESI) maps used by first responders to depict resources at risk, the Environmental Management Response Application (ERMA), and the CAMEO suite used by fire services across the country to respond to hazardous releases. These tools enable ERD to make the best cleanup decisions to minimize the environmental and economic impacts of oil spills. ERD represents NOAA on the National and Regional Response Teams that provide technical assistance, resources and coordination of preparedness, response and recovery activities for emergencies involving oil, hazardous substances, pollutants, and weapons of mass destruction in disasters and other incidents of national significance. ERD enhances national knowledge and readiness by providing training to hundreds of Federal, state and local partners each year. ERD is currently providing critical scientific support to the Coast Guard for the Deepwater Horizon oil spill in the Gulf of Mexico.

ASSESSMENT AND RESTORATION DIVISION - The Assessment and Restoration Division (ARD) works closely with other Federal and state trustees and the responsible party to assess and restore resources injured by oil spills, releases from hazardous waste sites, and vessel groundings on corals and seagrass beds. ARD ensures the public's natural resources are restored. ARD also influences remediation at hazardous waste sites to be protective of NOAA trust resources. ARD is mandated to perform these natural resource trustee roles by the Oil Pollution Act, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and the Clean Water Act. ARD is a leader among the state and Federal damage assessment community and supports the protection and restoration of natural resources vital to coastal ecosystems and local economies. ARD and its partners have generated over \$500 million of restoration over the life of its program, all of which has been paid for by the responsible party. ARD is now leading the damage assessment activities for the Deepwater Horizon oil spill in the Gulf of Mexico. In this arena, ARD works with NOAA's Restoration Center to provide assistance for estuary habitat restoration projects and to develop and enhance restoration monitoring and research capabilities. NOAA's efforts contribute to restoring estuaries that support local economies and understanding the efficacy of our restoration efforts.

MARINE DEBRIS PROGRAM - The Marine Debris Program (MDP), mandated by the Marine Debris Research, Prevention, and Reduction Act of 2006, has a lead role in addressing marine debris affecting the ocean and coastal environment and navigation safety in the United States. The MDP conducts reduction, prevention, and research activities, and supports grants, partnerships, and contracts to address marine debris issues. It has held regional, national, and international workshops and meetings and has coordinated NOAA positions on a variety of issues related to marine debris.

The MDP has positioned itself as a leader on marine debris issues within NOAA and the Federal community and chairs the Federal Interagency Marine Debris Coordinating Committee. Current emphasis of the program is on research (focusing on derelict fishing gear and microplastics), establishing a nation-wide marine debris monitoring program, and removal projects focusing on large, non-reaccumulating debris.

Schedule & Milestones:

- Respond to oil spills and other pollution events to influence cleanup decisions
- Influence remedial decisions at hazardous waste sites to protect NOAA trust resources
- Conduct natural resource damage assessments at priority spill and hazardous waste sites
- Conduct oil spill drills and implement response and damage assessment training for preparedness and capacity building in partners
- Address marine debris by removing and preventing debris and researching the cause of debris
- Achieve significant progress on regional ecosystem restoration planning, implementation, and monitoring

Deliverables:

- Technical support to CERCLA lead agencies, investigate potential injury to NOAA trust resources, develop protective remedial strategies, and address contaminated sediments
- Significant progress toward completing natural resource damage assessments or cases settled to recover funds for restoration of coastal resources
- Regional response exercises and drills with NOAA presence (Federal, state, local, private)
- Fifth International Marine Debris Conference, for 300-400 participants
- Socioeconomic monitoring of three ARRA restoration projects to estimate restoration project benefits

Performance Goals and Measurement Data

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Number of hazardous waste sites where assessments or cleanup plans address risks to NOAA trust resources	Target	Target	Target	Target	Target	Target
	15	15	15	15	15	15
Description: This measure tracks the number of hazardous waste sites (e.g., Superfund sites) for which NOAA provides scientific expertise to assess and develop cleanup plans, thereby reducing the risk to NOAA's trust resources.						

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Number of Natural Resource Damage Assessment cases where liability is resolved	Target	Target	Target	Target	Target	Target
	4	4	4	4	4	4
Description: This measure tracks the cumulative number of natural resource damage cases that are resolved, and for which restoration funds are secured. Successful cases reflect NOAA's ability to provide assistance and work cooperatively with industry on natural resource damage cases.						

NATIONAL CENTERS FOR COASTAL OCEAN SCIENCE (<http://coastalscience.noaa.gov>)

NOS' National Centers for Coastal Ocean Science (NCCOS) conducts research, monitoring, and assessments to build the scientific foundation essential for sustainable use of coastal resources. NCCOS integrates its expertise and efforts across all levels of government through a variety of interagency task forces and has established partnerships with NIST, EPA, USGS, NPS, and CDC, academic institutions and coastal community resource managers and public health officials. Coordinating activities with partner organizations, NCCOS ensures research activities meet the highest priority science needs, provide a balanced response to local, regional and national issues and are utilized by decision makers to sustain the viability of coastal ecosystems and communities.

Three of NCCOS' centers have on-site research facilities, and two centers conduct research through analyses of field data. Although each center has unique expertise, NCCOS' research, monitoring and assessment capabilities are leveraged and enhanced by partnerships to manage threats of harmful algal blooms (HABs), support coastal and marine spatial planning, advance research on climate change impacts to coastal ecosystems and address impacts of coastal contamination, with a focus on pharmaceuticals, endocrine disrupting compounds, flame retardants and other contaminants of emerging concern (CECs). Brief descriptions of activities conducted at NCCOS centers are provided below.

Center for Coastal Environmental Health and Biomolecular Research (CCEHBR) – Located in Charleston, SC, CCEHBR conducts applied research programs to: develop methods to characterize, detect and measure marine biotoxins, HABs and CECs; and understand the factors linking land use in the coastal zones with the distribution and effects of environmental contaminants on living marine resources and associated habitats. NOAA's Cooperative Oxford Lab in Oxford, MD is affiliated with CCEHBR and is the only Federal aquatic research facility on the Chesapeake Bay. Partnering with the U.S. Coast Guard, the NOAA Chesapeake Bay Office and the Maryland Department of Natural Resources, the Oxford Lab specializes in shellfish pathology and habitat restoration research to investigate the role of disease in the distribution of marine animal resources, and to determine the influence of environmental factors on the occurrence and persistence of diseases.

Center for Coastal Fisheries and Habitat Research (CCFHR) – Located in Beaufort, NC, CCFHR's science and research efforts evaluate the anthropogenic effects on resource productivity and improve delineation, recovery and restoration of injured habitat. It also develops tools for detecting HABs and improving forecasts of bloom conditions and examines shoreline and habitat response to climate change. A CCFHR facility in Seldovia, AK is a cooperative endeavor with the University of Alaska-Fairbanks that serves as a center for graduate student research in marine and coastal studies.

Center for Coastal Monitoring and Assessment (CCMA) – Located in Silver Spring, MD, CCMA conducts programs in applied research, monitoring, biogeography and assessment to evaluate the environmental quality and consequences of anthropogenic stresses to U.S. coastal, estuarine, and Great Lakes areas and to monitor toxic contaminants, nutrients, and related properties in biota, water, and sediments at over 300 sites through the National Status and Trends program. It also determines the distribution of anoxia/hypoxia, the occurrences of HABs, and the biodiversity and habitat characteristics of U.S. coastal, estuarine, and Great Lakes areas.

Center for Human Health Risk (CHHR) - Located in Charleston, SC at the Hollings Marine Lab (HML), a NOAA Center of Excellence in Oceans and Human Health, CHHR research is focused on genomics, environmental chemistry and toxicology, and pathogen source tracking, monitoring, and assessment to examine the interrelationships between human health and marine environmental

health; and to develop and integrate medical and marine technologies to understand, assess, sustain and protect marine and coastal ecosystems.

Center for Sponsored Coastal Ocean Research (CSCOR) – Located in Silver Spring, MD, CSCOR addresses emerging coastal ocean issues across NOAA’s mission responsibilities. CSCOR supports competitive, peer-reviewed, interdisciplinary research investigations with finite life cycles conducted on a regional scale over a 3-5 year period. The program relies upon established processes that reflect the requirements and advice of both the management and science communities in setting its priorities to ensure the utility and credibility of research designed to investigate ecological stressors including HABs, hypoxia and climate change; and to forecast the ecological effects of ecosystem stressors in a regional context for coastal ecosystems of concern to NOAA.

Oceans and Human Health (<http://www.eol.ucar.edu/projects/ohhi>) - NOAA created the Oceans and Human Health Initiative (OHHI) in response to recommendations of the U.S. Ocean Action Plan and mandates of the Oceans and Human Health Act (OHHA). The goal of the OHHI is to understand and predict connections between the condition of oceans, coasts, Great Lakes, and human and animal health, while providing information focused on reducing current and future risks to public health and enhancing efforts to provide curative agents and natural products from the sea. The OHHI supports research and develops tools, technologies, and services to identify, predict, reduce, and prevent coastal and ocean-related human health risks. The OHHI provides NOAA’s core scientific and institutional capacity for engaging public and human health partners in oceans and human health and serves as the foundation for integration, synergy, and leverage of other NOAA activities to reduce ocean and coastal related health risks and to optimize benefits from the sea. The OHHI works with public health workers, natural resource managers, and the public in order to ensure that these technologies and information are useful for enhancing human and marine animal health. OHHI provides an integrated approach and institutional framework to address the intersection of ocean and human health issues, serving as a focal point for NOAA, increasing efficiency, decreasing redundancy, and ensuring delivery of useful science and services to the health sector.

In response to established legislation and NOAA priorities and in concert with scientific expertise and capabilities, NCCOS’ internal research efforts deliver quality, timely and relevant science and services to the Agency and partners to respond to harmful algal blooms (30 percent), support coastal and marine spatial planning (25 percent), and assess the impacts of climate change (10 percent) and coastal contamination (35 percent).

Schedule & Milestones:

- Identify and analyze biological, benthic and oceanographic datasets at appropriate spatial and temporal scales to support New York and North Carolina offshore energy plans
- Research to support National Marine Sanctuary (NMS) rezoning and boundary delineation
- Characterize environmental conditions for HAB species to produce toxins and estimate toxin flux into food chains
- Collect and analyze data to support national baseline assessments of coastal resource health
- Investigate land use and weather modifications on runoff, eutrophication, HABs and pathogens for coastal Southeast, Gulf of Mexico and Chesapeake Bay
- Assess impacts of bulkheads on wave attenuation and marsh vegetation
- Develop new early warning system tools through OHHI partnerships and research activities

Deliverables:

- Operational national HAB forecasts for Gulf of Maine and Great Lakes

- Data visualization tools to support coastal and marine spatial planning
- Baseline ecological assessments in Gulf of Mexico, Chesapeake Bay and selected NMS and NERRs
- Reports on national ecological conditions and stressor impacts in coastal-ocean waters
- Models on marsh response to sea level rise and assessments of impacts of shoreline modification on ecosystem services in Mid-Atlantic region
- OHH-trained graduate students and postdoctoral scientists (approximately five per year)
- Sustained partnerships with public health partners at the Federal and state level

Performance Goals and Measurement Data

Performance Measure:	FY	FY	FY	FY	FY	FY
Number of coastal, marine and Great Lakes ecosystem sites adequately characterized for management (Measure 18a: NCCOS contribution only)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	15	16	16	17	17	18
<p>Description: Ecological characterizations provide the scientific basis for coastal and ocean assessments and forecasts, and the development of plans to manage resources and assess the effectiveness of measures implemented to effectively manage natural resources. Characterizations are conducted on NOAA trust resources, essential fish habitats, Great Lakes habitats and living resources and throughout the Nation’s coastal zone. A subset of these metrics contributes to NOAA’s measure 18a.</p>						

Performance Measure:	FY	FY	FY	FY	FY	FY
Cumulative number of coastal, marine and Great Lakes forecast capabilities developed and used for management (Measure 18b: NCCOS contribution only)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	3	4	5	6	7	7
<p>Description: This measure is a subset of measure 18b. NOAA’s discrete forecast models allow resource managers to: 1) make decisions based on predicted environmental and socioeconomic impacts related to a particular issue; 2) use issue-based forecasts to predict the impacts of a single ecosystem stressor (e.g., climate change, extreme natural events, pollution, invasive species, and land and resource use) and 3) evaluate the potential options to manage those stressors to fulfill the ultimate goal for resource managers to use NOAA’s forecasts to better manage ecosystem use, condition, and productivity. These forecasts will be based on field and laboratory studies, existing data, and models predicting environmental conditions under different scenarios and will have capabilities specific to a geographic area and be counted for each ecosystem as they become operational. For example, harmful algal bloom forecasts in the Gulf of Mexico and Gulf of Maine are two separate forecast capabilities and similarly, multiple, distinct forecast capabilities could be counted within a single ecosystem (i.e., harmful algal blooms, pink shrimp harvest, and hypoxia – all in the Gulf of Mexico).</p>						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Percentage of health early warning tools, technologies, and information services that are used by NOAA partners/ customers to reduce health risks from the oceans and coasts	10%	10%	10%	10%	10%	10%
Description: Science-based health early warning systems inform managers and health officials about pending human health risks. These systems result in public health warnings and warrant potential behavioral changes to decrease risks and associated health impacts. The goal is to increase the percentage of the ten U.S. Large Marine Ecosystems with operational science-based health early warning systems from 10 percent to 50 percent.						

PROPOSED LEGISLATION:

The Administration will work with Congress to reauthorize the Coral Reef Conservation Act, the Oceans and Human Health Act, the Marine Debris Research, Prevention, and Reduction Act, and the Harmful Algal Bloom and Hypoxia Research and Control Act.

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PROGRAM CHANGES FOR FY 2012:

Coastal and Marine Spatial Planning (Base Funding: 0 FTE and \$0; Program Change: +9 FTE and +\$6,770,000): NOAA requests an increase of \$6,770,000 and 9 FTE for a total of \$6,770,000 and 9 FTE to develop an agency-wide capability to conduct and support comprehensive coastal and marine spatial planning (CMSP) in U.S. waters. The requested increase will fulfill a critical role in implementing the National Ocean Policy and NOAA's Next Generation Strategic Plan (NGSP), and will enable balanced use of our oceans and coasts so that valuable ecosystem services can be sustained for this and future generations.

Proposed Actions:

This request reflects the growing recognition of the urgent need for comprehensive, integrated planning of how we use and seek to benefit from specific ocean spaces and the services they provide. Building upon NOAA's broad science, technical and policy strengths, the proposed activities address NOAA's diverse place-based stewardship and marine transportation mandates and provide the foundation necessary for effective data integration and regional capacity building. Combined, the proposed activities will create a transparent, robust, science-based capability to support and conduct CMSP for the Nation's oceans as called for in the National Ocean Policy and CMSP Framework adopted by Presidential Executive Order #13547 on July 19, 2010. Plans will be developed in partnership with emerging Regional Ocean Partnership structures and other Federal agencies, and the processes will be transparent and involve the public.

Specifically, NOAA will support the following activities on national and regional scales to meet the key implementation deliverables outlined in the national CMSP Framework with a primary focus on data management and integration:

Regional Data Integration and Planning Support (\$3.411M)

- Working collaboratively with regional and interagency partners, NOAA will support regional CMSP efforts through the consolidation, synthesis, integration and dissemination of key data sets that will be used for assessing current and projected states of regional ecosystems, services, uses and governance.
- NOAA will assist regional partners in developing Regional Planning Bodies called for in the CMSP Framework and beginning the CMSP process including identification of objectives and development of work plans.

Building National Capacity: Data Integration, Tools and Monitoring (\$3.359M)

- NOAA will develop an agency-wide plan for integrating key spatial data into the CMSP process and will play a central catalytic and integrating role with interagency and non-governmental partners to design, construct, test and provide data portal(s) for key CMSP information and tools. NOAA will also convene interagency partners to assist in defining requirements for data and systems development, standards and protocols, and a national strategy for integrating regional data management efforts under the National Information Management System.
- Working with external partners, NOAA will enhance the applicability and interoperability of web-based and desktop decision support tools for planners to better understand ecosystem services, cumulative impacts, site suitability, and tradeoffs involved in alternative ocean use scenarios under a variety of environmental and socioeconomic conditions and will work to identify gaps in spatial data and derived products to effectively create and implement regional CMS plans.

- NOAA will contribute to organizing, hosting and synthesizing the initial national and regional workshops and simulation exercises that will create a common purpose, understanding and momentum towards CMSP implementation.

Combined, the proposed activities will significantly advance the Nation's capability to effectively and transparently assess and match competing human uses to appropriate ocean areas. To this end, the proposed activities will: 1) enable the ability to begin to understand, for the first time, where, how, and why people use the ocean waters of the U.S. in a systemic way; 2) enable managers and stakeholders to fully and objectively understand the implications of spatial use decisions on the ecological services provided by the ocean to current and future generations of Americans; 3) help NOAA ocean management partners by providing critically needed data integration information, tools, and support for states and regional entities to more effectively and equitably manage their coastal resources; and 4) establish and fill a priority set of data gaps for each region through a process of engagement with stakeholder agencies and interests, using ongoing programs and activities.

Statement of Need and Economic Benefits:

Human uses of ocean resources are accelerating faster than our ability to manage them. Increasing conflicts are unavoidable as demands increase for ocean-based energy (oil and gas, wind, wave), marine aquaculture, commercial and recreational fishery products, shipping and navigation services, and other activities. At risk is the health of ocean ecosystems as well as the benefits they provide to coastal communities and the national economy. The Nation's current approach to managing the use of ocean resources is *ad hoc* and fragmented, with no systematic way to evaluate competing ocean uses and to inform and navigate the often difficult trade-offs they require. In July 2010, President Obama signed Executive Order #13547 adopting the Final Recommendations of the Interagency Ocean Policy Task Force as the National Policy for the Stewardship of the Oceans, Our Coasts and the Great Lakes which includes a Framework for implementing CMSP across the United States.

CMSP is a comprehensive, adaptive, integrated, ecosystem-based, and transparent spatial planning process, based on sound science, for analyzing current and anticipated uses of ocean, coastal, and Great Lakes areas. CMSP identifies areas most suitable for various types or classes of activities in order to reduce conflicts among uses, reduce environmental impacts, facilitate compatible uses, and preserve critical ecosystem services to meet economic, environmental, security, and social objectives. In practical terms, CMSP provides a public policy process for society to better determine how the ocean, coasts, and Great Lakes are sustainably used and protected - now and for future generations.

NOAA's existing scientific capacities and ocean management authorities—including ocean observing systems and mapping capabilities, along with area-based management responsibilities for marine sanctuaries, estuarine research reserves, fisheries, protected marine resources, habitat, and the national system of marine protected areas (MPAs)—uniquely position the agency to make significant contributions to CMSP across the Nation. In collaboration with Federal, state and local partners, NOAA will lead the Nation toward a comprehensive, integrated approach to CMSP that will enable the sustainable, science-based allocation of critical ocean resources. NOAA has major technical and implementation roles to play in CMSP both by integrating existing monitoring and observation data and combining critical assessments of bathymetric, ecological, human use, and oceanographic information into decision support tools for use by managers, and through its diverse place-based stewardship missions to achieve appropriate conservation, sustainable use, and other societal goals. CMSP furthers NOAA's mission and strategic goals in the coastal and estuarine systems, the Great Lakes, states' territorial seas and the exclusive economic zone (EEZ). Conducted with appropriate

spatial data and decision support tools, CMSP will sustain valued ecosystem services, provide greater certainty and predictability to ocean industries, and reduce conflicts among competing uses.

The efforts described in this proposal represent the first comprehensive effort by the agency to facilitate CMSP as defined in the National Ocean Policy. Fully implemented, comprehensive, science-based, and transparent CMS plans will advance many of NOAA's ocean stewardship and navigation mandates and will therefore benefit the desired outcomes already established for the programs implementing these mandates. As a planning process, many of the measures to track CMSP progress will be output based, but will ultimately improve the outcomes of existing programs by providing the entities involved (states, other Federal agencies, and NOAA) with the means to make better decisions about how to allocate uses to ocean spaces. In addition to enhancing existing outcomes (e.g. sustainable fisheries, safe navigation, improved water quality, living marine resources, critical habitat protected, etc.), a truly integrated and comprehensive marine spatial plan will cut across many NOAA programs and include broad-based societal benefits such as: sustainable human uses located in appropriate ocean areas; healthy and resilient ecosystems that support coastal communities and economies; reduced user conflicts over ocean areas; increased certainty and predictability for ocean-dependent industries and permitting and siting for offshore renewable energy; and enhanced understanding about ecosystem services and the need for stewardship of our ocean, coastal and Great Lakes resources.

Base Resource Assessment:

The base resources for this activity are described in the Ocean Resources Conservation and Assessment base narrative.

Schedules and Milestones:

- Formalize NOAA CMSP Program (FY 2012)
- Develop Prototype Portal & National Information Management System (NIMS) (FY 2012)
- Determine composition of and Establish Regional Planning Bodies (FY 2012)
- Organize and convene national and regional workshops (FY 2012)
- Develop Regional CMSP work plans (FY 2012)
- Develop NOAA Internal Data Integration Plan (FY 2012)
- Execute NOAA Internal Integration Plan and O&M of NIMS and Portals(FY 2012-2013)

Deliverables:

- A coordinated NOAA structure for effective implementation of the National Ocean Policy and CMSP Framework that supports interagency engagement at the national level and the nine Regional Planning Bodies with tools and capacity building needed for CMSP
- A NOAA-wide plan for integrating key spatial data for CMSP decision-making
- Development of Prototype Portal guidance for a NIMS

Performance Goals and Measurement Data

Performance Measure: Cumulative number of states or planning bodies utilizing NOAA data and decision support tools for CMSP	FY	FY	FY	FY	FY	FY
	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Increase	N/A	3	10	25	35	35
Without Increase	0	0	0	0	0	0
<p>Description: This measure will track how many states or regional and sub-regional planning bodies are using the information, tools, and systems NOAA develops to create coastal and marine spatial plans. Successful marine spatial plans will require collaboration with coastal states, other Federal agencies, and stakeholders. The tools developed by NOAA will allow and encourage the sharing of critical information between these and other planning participants. Adoption and utilization of these tools will follow the regional implementation approach proposed by NOAA.</p>						

Performance Measure: Percentage of NOAA integrated data and information (relevant to CMSP decision making) that is made readily available through the National Information Management System (NIMS)	FY	FY	FY	FY	FY	FY
	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Increase	N/A	65%	75%	85%	95%	99%
Without Increase	0%	0%	0%	0%	0%	0%
<p>Description: At present, NOAA's data and information collected under varying mandates is not always accessible, properly integrated, or in a useable format for CMSP decision-making needs. By identifying such data and making it readily available through the NIMS, NOAA will facilitate transparent, rigorous, and defensible spatial allocations of ocean uses that are aimed at reducing conflicts of usage, data uncertainty for users and industry, and negative impacts on ecosystem services.</p>						

PROGRAM CHANGE PERSONNEL DETAIL

Activity: National Ocean Service
 Subactivity: Ocean Resource Conservation and Assessment

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Program Analyst	Silver Spring, MD	ZA-04	2	62,467	124,934
Physical Scientist	Silver Spring, MD	ZP-03	3	62,467	187,401
Geographer	Silver Spring, MD	ZA-03	1	62,467	62,467
Geographer	Monterey, CA	ZA-03	1	67,963	67,963
Physical Scientist	Monterey, CA	ZA-03	1	67,963	67,963
Physical Scientist	Charleston, SC	ZA-03	1	57,408	57,408
Geographer	Charleston, SC	ZA-03	1	57,408	57,408
Program Analyst	Durham, NH	ZA-03	1	62,758	62,758
Total			<u>11</u>		<u>688,302</u>
less Lapse		25%	<u>2</u>		<u>172,076</u>
Total full-time permanent (FTE)			9		516,227
2011 Pay Adjustment (0%)					0
2012 Pay Adjustment (0%)					<u>0</u>
TOTAL					<u>516,227</u>
Personnel Data			<u>Number</u>		
Full-Time Equivalent Employment					
Full-time permanent			9		
Other than full-time permanent			<u>0</u>		
Total			9		
Authorized Positions:					
Full-time permanent			11		
Other than full-time permanent			<u>0</u>		
Total			11		

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Subactivity: Ocean Resource Conservation and Assessment

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	516
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	516
12 Civilian personnel benefits	147
13 Benefits for former personnel	0
21 Travel and transportation of persons	517
22 Transportation of things	3
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	12
25.1 Advisory and assistance services	0
25.2 Other services	2,378
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	250
31 Equipment	210
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	2,737
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	6,770

IOOS Regional Observations: IOOS[®] Surface Current Mapping (Base Funding: 0 FTE and \$0; Program Change: +0 FTE and +\$5,000,000): NOS requests an increase of \$5,000,000 and 0 FTE for a total of \$5,000,000 and 0 FTE to implement the U.S. Integrated Ocean Observing Systems (IOOS[®]) Surface Current Mapping plan to monitor near-shore currents using High Frequency (HF) Radar. This program will be implemented by the IOOS[®] Regional Coastal Ocean Observing Systems (RCOOS) to deliver real-time surface current data to the national HF Radar surface current monitoring network.

Proposed Actions:

The requested resources will support Regional IOOS[®] HF Radar stations with an emphasis on those stations currently operating and delivering data to the national network in regions of offshore oil production and in the vicinity of major ports and harbors. The U.S. IOOS[®] program will award funding via an established merit-based competitive process with RCOOS, and through contracts with Federal partners to:

- Maintain geographic coverage of HF Radar stations which are at the extent of FY 2010 coverage by establishing maintenance technician teams and maintaining spare parts inventories;
- Maintain national network servers with quality assurance and quality control procedures and fail-over redundancy;
- Conduct annual monitoring and review of the network performance; and
- Manage the HF Radar network by negotiating frequency management agreements, improving algorithm and data assimilation methods, and coordinating data delivery to the U.S. Coast Guard's Search and Rescue Optimal Planning System (SAROPS).
- Support new HF Radar stations through the existing Regional IOOS competitive process.

Statement of Need and Economic Benefits:

U.S. coastal waters are currently sparsely sampled, providing a poorly detailed description of the coastal ocean environment. The requested funding will improve and maintain the geographic coverage for HF Radar surface current measurements that support oil spill response, national security, U.S. Coast Guard search and rescue (SAR) operations, PORTS[®], marine transportation, water quality, pollutant tracking, and harmful algal bloom (HAB) tracking. The increase will also provide support for emerging uses including Ecosystem-based Management, Marine Protected Areas, Coastal and Marine Spatial Planning, weather, climate and marine forecasting, energy siting and production, and ocean, coastal and Great Lakes resource management.

The 2010 Deepwater Horizon oil spill highlighted the utility of HF Radar. NOAA's Office of Response and Restoration relied on real-time data collected from the national HF Radar surface current monitoring network to provide new data for inclusion in trajectory predictions of oil dispersal and to verify models used to assess the likelihood of the oil moving into the Loop Current. HF Radar data was also used daily by NOAA's Office of Response and Restoration (OR&R) during the Deepwater Horizon oil spill response to create trajectory forecasts (which were used by Federal responders to deploy spill response assets and identify fishery closures). In 2007, HF Radar was used to verify that trajectories of oil from the M/V *Cosco Busan* spill would not flow into the Federally-protected National Marine Sanctuaries near the San Francisco Bay, and resources were able to be deployed to other areas under greater threat. With sustained, long-term surface current data sets, NOAA's OR&R will now be able to provide Trajectory Analysis Planner products for threat assessments.

U.S. Coast Guard SAR operations demonstrate the benefits of improved surface current monitoring. The Coast Guard currently ingests surface current data from HF Radar into its SAR

operations center for the mid-Atlantic coast and estimates that access to HF Radar data in all U.S. coastal waters would save 26-45 additional lives annually and reduce costs spent on rescue flights.

The National HF Radar surface current monitoring network also benefits the development of offshore energy projects. In New Jersey, for example, the state will expand the HF Radar network in the Mid-Atlantic to support assessments of offshore wind projects worth \$7 billion. The state can realize these assessments due to the existing NOAA-supported national HF Radar management infrastructure.

Base Resource Assessment:

The base resources for this activity are described in the Ocean Resources Conservation and Assessment base narrative.

Schedule and Milestones:

- Assess the network as scoped in the national plan with a geographic focus on oil exploration and production areas and high traffic shipping lanes and ports (FY 2012)
- Sustain Regional IOOS operations and maintenance of existing HF Radar network to support U.S. Coast Guard operational search and rescue, oil spill response, water quality and pollutant tracking, harmful algal bloom (HAB) monitoring, and offshore wind energy siting (FY 2012-2016) Maintain national network servers with quality assurance, control procedures, and fail-over redundancy (FY 2012-2016)
- Archive data at a national data center (FY 2014-2016)
- Monitor performance and “up time” of the HF Radar network (FY 2012-2016)

Deliverables:

- Version 2 of the short term prediction system for nationwide search and rescue forecasting (FY 2012)
- All HF Radar surface current data delivered to U.S. Coast Guard, expanding from solely mid-Atlantic to national coverage (FY 2012)
- Trend analysis on system performance and “up time” (FY 2012-2016)
- Service level agreements for data structure and methods for archiving HF Radar surface current data at the National Oceanographic Data Center (FY 2012-2013)
- Surface current data archived at the National Oceanographic Data Center according to agreed-upon methods (FY 2014-2016)

Performance Goals and Measurement Data

Performance Measure: Percentage of U.S. coastal waters with 2/3 reduced search and rescue area (96 hour period)	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	19%	19%	19%	19%	19%	19%
Without Increase	19%	16%	13%	11%	10%	8%

Description: Percent of U.S. coastal waters with 2/3 reduced search and rescue area (96 hour period) resulting from USCG SAROPS integrating IOOS surface currents at 80% data availability. USCG estimates the search area is reduced by 2/3 in a 96 hour period when the SAROPS system is linked to the IOOS HFR data, thereby leading to greater numbers of lives saved and reduced search costs annually. As a baseline, U.S. coastal waters are defined as the area from the contiguous U.S. shoreline out to 150 km, for a total area of 1.5 million km². “Without increase” targets decline each year rather than remaining at a steady value as existing radars are taken off-line without operations and maintenance resources that would be provided with this proposed program increase.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Subactivity: Ocean Resource Conservation and Assessment

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	300
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	4,700
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>5,000</u>

IOOS® Regional Observations: Marine Sensor Technology Innovations: (Base Funding: 0 FTE and \$3,000,000 Program Change: +0 FTE and +\$8,500,000): NOS requests \$8,500,000 and 0 FTE for a total of \$11,500,000 and 0 FTE for the IOOS Regional Observations line to develop and improve sensors for ocean chemical, biological, and physical parameters at multiple spatial and temporal scales to monitor changing conditions in the oceans, coasts, and Great Lakes.

Proposed Actions:

Through this effort, NOAA will focus on the “Sensors for Marine Ecosystems” near-term priority and the “Opportunities for Progress” for observing systems and models as specified in the Ocean Research Priorities Plan and Implementation Strategy titled, “Charting the Course for Ocean Science in the United States for the Next Decade” U.S. IOOS® will develop and apply a variety of biological, chemical, and physical marine sensing technologies to allow rapid, accurate, and cost effective detection, identification, characterization, and quantification of disease-causing microbes, toxins, and contaminants in marine waters, and seafood which may indicate health risks to humans. The goal will be to incorporate the successful marine sensor technologies into Regional IOOS and other monitoring and prediction programs to meet region-specific stakeholder needs as mandated by the Integrated Coastal and Ocean Observation System (ICOOS) Act (2009) and directed by the National Ocean Policy.

NOAA will make competitive, extramural awards to teams of U.S. IOOS Regions, industry, academia, and Federal partners for the development, demonstration and transition to operations of marine sensor technologies with potential to result in significant improvements to meet National Ocean Policy priorities related to informing decisions and improving understanding, water quality, and observations, mapping, and infrastructure. The competitions will be conducted through the National Oceanographic Partnership Program to leverage other agency investments intended to address the Nation’s needs for ocean information. Additionally, IOOS will coordinate with NOAA’s Oceans and Human Health Initiative to ensure topic areas meet priority needs. These demonstrations will be staggered and phased to allow new topics to be competed through the NOPP every two years and will include cross-agency prioritization of topics. With the funding NOAA will:

- Develop and identify appropriate biogeochemical sensors and platforms for rapid and accurate detection, identification, and quantification of ocean and coastal pathogens, nutrients, contaminants and harmful algae and their toxins that may indicate health risks to humans;
- Develop sensors to support validation of ocean satellite and in-situ observation systems;
- Evaluate and test sensors for transition to operational use within the Integrated Ocean Observing System (IOOS) to support harmful algal bloom monitoring, ocean acidification monitoring, aquaculture production, and ecosystem based management;
- Support cost-effective development and engineering to ensure sustainable and reliable use of sensors in the marine environment including analysis of emerging technologies such as miniaturization of sensors for hosting on smaller, energy constrained platforms such as gliders; and the use of marine animals as mobile observing platforms via tagging;
- Develop microarrays and other genomic tools to elucidate effects of multiple environmental stressors on key marine organisms, leading to new levels of understanding of ecosystem processes and impacts of climate change;
- Enhance coastal ocean and human health risk assessments and forecasts by refining models to describe and predict impacts of stressors (climate change, freshwater availability, coastal development, human behavior, anthropogenic pollutants and naturally occurring pathogens and toxins); and

Integrate U.S. IOOS compliant data into user-specified tools and information products (observations, model output, forecasts) at local and regional scales.

Biosensing capability coupled with traditional oceanographic data will enhance efforts in research, modeling, and forecasting, in turn enhancing the ability to make informed management decisions, even under a changing climate.

Statement of Need and Economic Benefits:

Through recreation, residential and commercial development, and employment, human populations are coming into increasing contact with our oceans and coastal waters. Continued coastal development, changes in land use, a varying climate, and altered ecosystem diversity add a complexity of environmental and human stresses, the consequences of which we do not yet fully understand and are ill prepared to manage. Approximately 100 million Americans use coastal and Great Lakes waters for recreation each year, many of them multiple times, and they are exposed to an increasingly dangerous array of ocean health threats from industrial, urban, and agricultural sources. In 2004, there were nearly 20,000 days of closings and advisories at ocean, bay and Great Lakes beaches, of which 73 percent were attributed to unknown sources and cost millions to local economies. During 2006-2007, beach advisory days due to sewage contamination more than tripled to 4,000 and 35 percent of tested estuaries and 12 percent of ocean shoreline waters were considered unfit for designated uses (*Testing the Waters 2009*, NRDC 2009).

Our ability to rapidly and accurately monitor and assess ocean health threats, biodiversity and other indicators of marine ecosystem health, and biological effects of climate change have lagged far behind our capacity to detect physical changes in the oceans and atmosphere. Yet, it is in the biological realm that most people are likely to first encounter serious effects of climate change, such as through increased health threats from a variety of sources and changed distributions and perhaps loss of marine and other food sources. This significant capability gap is the target of the “Sensors for Marine Ecosystems” priority described here. This work will enable rapid and cost-effective identification of ocean-borne health threats, thereby enabling actions to protect public and animal health, advance our understanding of how multiple stressors – including climate change – affect the health of coastal ecosystems.

U.S. IOOS provides continuous data on open oceans, coastal waters, and Great Lakes to inform decision-making. Two studies, *The Business Case for Improving NOAA’s Management and Integration of Ocean and Coastal Data* (2009) and *Estimating the Economic Benefits of Regional Ocean Observing Systems* (Kite-Powell et al. 2004), confirmed that investments in ocean observation will generate significant economic benefits to both NOAA and the Nation. Users of ocean data, including modelers and meteorologists, spend an average of 25–50 percent of their time searching for, accessing, formatting, and ingesting data into their products. The Kite-Powell study summarized the magnitude of potential economic benefits of deploying a network of ocean observing systems. Conservative estimates of benefits demonstrate that between \$100 million and \$1 billion in economic growth would be created by an investment in regional ocean observing systems (Kite-Powell et al. 2004). This sustained investment in technology innovation will propel marine sector businesses, job growth, and scientific discovery while supporting science, technology, engineering, and mathematics (STEM) education.

Base Resource Assessment:

The base resources for this activity are described in the Ocean Resources Conservation and Assessment base narrative.

Schedule and Milestones:

	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Prioritize National Oceanographic Partnership Program (NOPP) topics with federal agencies interested in marine sensor innovative technology demonstrations to advance three-dimensional monitoring of coastal, Great Lakes, and ocean conditions		X		X	
Publish proposal solicitation via NOPP for 3-year marine sensor technology demonstrations for transition to operations within IOOS Regions.		X		X	
Initiate competitively selected demonstration projects	X		X		X
Make awards and conduct technology demonstrations in IOOS Regions	X	X	X	X	X
Transition demonstrated tools or technologies into operations				X	

Deliverables:

- Incorporation of two or more emerging tools or technologies into operations of two or more U.S. IOOS regions every three years (FY 2014 – 2016)
- Expanded capability of U.S. IOOS, improving mission readiness of Federal agencies and ability of U.S. IOOS regions to meet local and regional stakeholder needs for ecosystems data including new data from marine sensor development (FY 2012 –2016)
- NOPP topic demonstrations for sensor development, platform integration, tool development, and technology transition into operations (FY 2014 –2016)
- Expansion of scientific and technical jobs as well as training and education among industry and U.S. IOOS regional partners involved in demonstrations (FY 2012 – 2016)

Performance Goals and Measurement Data

Performance Measure: Cumulative number of new marine sensors or ecosystem tools developed to enhance ecosystem based management for fisheries, protected species, public health, and additional topics as defined by the National Oceanographic Partnership Program process	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	n/a	0	0	4	4	8
Without Increase	0	0	0	0	0	0
Description: This measure is focused on the development of new sensors or tools resulting from 3-year NOPP marine sensor technology demonstrations. Staggered starts for projects will lead to four new sensors or tools every two years starting in FY 2014. This assumes at least one sensor or tool per topic demonstration.						

Performance Measure: Annual number of tools, technologies, or products developed from tested and validated sensors or related research used to improve ecosystem-based management and additional issue areas as defined by the National Oceanographic Partnership Program process.	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	n/a	0	0	8	4	8
Without Increase	0	0	0	0	0	0
Description: This measure is focused on the application of marine sensor technologies and tools. Specifically, this measure tracks success in translating tested and validated sensor technologies and related findings into information products, tools, or technology that improve ecosystem-based management of ocean, coastal and Great Lakes resources, protection of trust resources, and the prediction and reduction of ocean and coastal related human and marine organism health risks. This measure assumes three-year technology demonstrations with resulting tools becoming available in year three and becoming available to operations in year four.						

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Subactivity: Ocean Resource Conservation and Assessment

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	2,500
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	6,000
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	8,500

IOOS Regional Observations (Base Funding: 0 FTE and \$27,000,000; Program Change: - 0 FTE and -\$12,445,000): NOAA requests the following decreases from the IOOS Regional Observations line for funding that was provided in the Consolidated Appropriations Act, 2010 : -\$5,445,000 in competitive grant funding for regional ocean observations systems, -\$4,000,000 for a regional test bed to evaluate existing coastal technologies, and -\$3,000,000 for a consortium for testing and advancing new sensor technologies. Projects were awarded in FY 2010 with these funds and no additional funding is necessary. Regional ocean observing systems continued to deliver real-time ocean and coastal observing data and products to meet priority regional stakeholder needs including delivering data to the IOOS data assembly center for distribution through the Global Telecommunications System for use by operational forecasters and modelers. The regional test bed to evaluate existing coastal models and technologies was established and will deliver a cyber tool box for model analysis and comparison, a Web interface for testing, visualization and communication, and a consensus process for transitioning models into operations. The consortium for testing and advancing new sensor technologies received one year of funding to conduct sensor technology evaluations and deliver the resulting reports including final reports on analysis of pCO sensors; conduct verification testing of *in situ* hydrocarbon sensors. NOAA is near the end of its process of investigating the establishment of a Cooperative Institute for this capability. The President's FY 2012 Request includes \$14,555,000 for IOOS Regional Observations. The Regional Associations can seek funds through this program via a competitive process. These projects will contribute towards NOAA's goal of providing continuous data on open oceans, coastal waters, and Great Lakes to inform decision-making, to ensure that Federal and regional contributions develop in a consistent and complementary manner by identifying and sharing standard procedures and integration services, to improve our understanding, forecasting, stewardship, and use of coastal waters, and to improve the accessibility and interoperability of ocean data, delivering time and cost savings that can be redirected to improving existing and developing new products. The President's FY 2012 Request also includes \$11,500,000 to develop and improve sensors for ocean chemical, biological, and physical parameters at multiple spatial and temporal scales to monitor changing conditions in the oceans, coasts, and Great Lakes.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Subactivity: Ocean Resource Conservation and Assessment

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(12,445)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(12,445)

Gulf of Mexico Regional Collaboration (Base Funding: 0 FTE and \$4,750,000; Program Change: -0 FTE and -\$4,750,000): NOAA requests a decrease of \$4,750,000 for a total of \$0 and 0 FTE, ending the competitive NOAA grant program targeted at advancing regional coastal resource priorities defined by the five Gulf States in *The Governors' Action Plan II for Healthy and Resilient Coasts*. This grant program was strategically-designed to solicit and competitively fund applications representing each priority area in the action blueprint steps listed in the *Governors' Action Plan II*. Eligible grant recipients included state, local, and tribal governments, institutions of higher education, and non-profit organizations. Although this grant program will cease, a new \$20,000,000 competitive grant program, Regional Ocean Partnerships, is proposed in FY 2012 to provide funding to implement the action plans of existing regional ocean partnerships and to begin planning activities in all nine of the coastal regions. As such, entities that had competed for funds under the Gulf of Mexico grant program in the past will be eligible to compete for a larger pool of funds under Regional Ocean Partnerships. In addition, the FY 2012 President's Budget includes a \$4 million request for preparing coastal communities for climate hazards. This activity will have an initial focus on the Gulf of Mexico and the Pacific Islands and would support the *Governors' Action Plan II* priority to employ "mitigation methods such as accurate mapping, tide level predictions, resilient land use plans, and habitat conservation" that can increase a community's ability to recover after experiencing destructive coastal storms to due climate change and sea level rise.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Subactivity: Ocean Resource Conservation and Assessment

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	(20)
25.1 Advisory and assistance services	0
25.2 Other services	(400)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	(10)
31 Equipment	(20)
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(4,300)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(4,750)

Coastal Storms Program (Base Funding: 0 FTE and \$2,800,000; Program Change: +0 FTE and +\$74,000): NOAA requests an increase of 0 FTE and \$74,000 for the Coastal Storms Program for a total of \$2, 874,000 and 0 FTE. This increase is requested to support existing program requirements not provided for in the FY 2010 Consolidated Appropriations Act. The Coastal Storms Program harnesses and leverages NOAA and community resources to reduce the adverse impacts of coastal storms by developing improved and integrated products and services that address specific state/local decision-maker needs. The Coastal Storms Program brings NOAA-wide expertise, products, and services to address the challenges unique to each region and targets tools and outreach to the needs of local stakeholders. Efforts to integrate existing product service lines to meet unique needs are also included. The Coastal Storms Program will build a seamless “observation-to-user” capability that brings NOAA-wide expertise, products, and services to locales to address challenges unique to those regions. Efforts to integrate existing product service lines to meet unique needs are also included. Targeted geographies include the St. John’s water management district in northeast Florida, part of the Lower Columbia River watershed, the Southern California Bight. The Coastal Storms Program is also currently working in the Gulf of Mexico and Pacific Islands (Hawaii and the U.S. territories). The specific issues addressed are determined by regional needs as articulated by users. Commonalities are emerging in observations, modeling, outreach, risk and vulnerability, and decision-maker needs assessments among pilot regions.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service

Subactivity: Ocean Resource Conservation and Assessment

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	74
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	74

Coastal Services Center: Preparing Coastal Communities for Climate Hazards (Base Funding: 0 FTE and \$0; Program Change: +2 FTE and +\$4,000,000): NOAA requests an increase of \$4,000,000 and 2 FTE for a total of \$4,000,000 and 2 FTE to reduce the vulnerability of coastal communities and the U.S. economy to the hardship and costs associated with climate-related natural hazards. NOAA will apply its scientific and technical expertise to develop improved tools and work with communities to apply these tools so that the devastating human, economic and environmental impacts of events such as sea level change and other forms of coastal inundation can be mitigated or effectively managed.

Proposed Actions:

This increase will help communities (with an initial focus on the Gulf of Mexico and Pacific Islands) address the escalating economic and environmental costs associated with sea level change and other forms of coastal inundation, and will directly apply science and technology strategies to drive economic recovery, job creation and economic growth. This program directly supports the *Governors' Action Plan II for Healthy and Resilient Coasts* priority to employ "mitigation methods such as accurate mapping, tide level predictions, resilient land use plans, and habitat conservation and restoration" that can increase a community's ability to recover after experiencing destructive coastal storms due to climate change and sea level rise. NOAA will focus efforts on directly helping communities with the tools they need to improve climate adaptation and related hazard mitigation strategies, identify risk and vulnerability, understand and prepare for the impacts of coastal inundation, and enhance communication. Specifically, this increase will provide:

- **Climate Adaptation Assessment and Planning (\$1.7M).** NOAA will develop planning guidelines to support coastal state and community requirements to plan for the impacts of climate change. With this increase, NOAA will incorporate sea level change data to provide training and information on understanding coastal risk and vulnerability assessments and develop associated products with Federal (FEMA, USGS, and USACE), state, and local agencies to translate science into management applications. Coastal decision support resources (e.g., augment web portals, GIS tools) that integrate social, economic and climate data in useful and interactive formats will also be developed.
- **Coastal Inundation Modeling, Forecasting, and Prediction (\$2.3M).** NOAA will integrate observations into climate change projection products to address impacts and assessments at global, regional, and local scales and provide accurate and timely predictions of changing sea level - considering ocean temperatures, glacier and ice sheets, regional and local circulation and wave patterns, land water reserves, and movement of land. Interoperable community modeling systems will be developed and transitioned to produce and drive improved total water level and inundation forecasts (taking into account rising sea levels) and GIS tools with increased resolution, accuracy, and completeness will be provided to drive planning scenarios in vulnerable regions. NOAA will implement techniques (e.g., needs assessments and other social science applications, training and risk evaluations) to ensure that communities have the guidance to improve their resilience and response to climate hazards, such as increased flooding and storm surge impacts due to sea-level rise.

This increase represents a joint effort across a number of NOAA programs to leverage strengths and collaboratively address needs identified via regional and national coastal management needs assessments to deal with climate hazards: the Coastal Services Center (including the Pacific Services Center), the National Climate Data Center, the Office of Ocean and Coastal Resource Management, Climate Program Office, the Office of Coast Survey, the National Weather Service and the Coastal Storms Program.

Statement of Need and Economic Benefits:

Today, coastal communities comprise only one-fifth of the Nation's land, but they house over one-half of the U.S population, generate nearly 60 percent of the U.S. economy (*State of the US Ocean and Coastal Economies*, NOEP 2009), and account for the most repetitive flood loss claims with the National Flood Insurance Program (NFIP) and the private casualty loss insurance industry at a cost of \$200 million per year for the NFIP alone (*24th Annual Workshop on Hazards Research and Applications*, Howard 1999). As sea levels rise and increase the impact of storms and associated flooding, it is expected that these losses will grow. Changing climate is expected to increase the impact of hazardous weather events in other ways, as well. For example, recently the Climate Change Science Program (CCSP) predicted that the Atlantic and Pacific basins will be hit with harder cold-season storms, packed with stronger winds and taller waves. The CCSP also noted that the power and frequency of Atlantic hurricanes have increased substantially in recent decades, likely driven by human-caused increases in sea surface temperatures (*Weather and Climate Extremes in a Changing Planet*, CCSP 2008; *Coastal Sensitivity to Sea Level Rise: A Focus on the Mid-Atlantic Region*, CCSP 2009).

Federal agencies, including NOAA, have the expertise and data needed to help coastal communities understand their risk exposure to coastal hazards. In many cases, coastal states and local governments do not have the budgets to support their own in-house expertise or necessary data collection to assess the potential impacts of coastal hazards on their communities and resources. There are significant opportunities to leverage Federal expertise and data with state and local investments to (1) improve decision-making at the state and local level and (2) meet national goals for reducing impacts of coastal hazards on the public treasury. This is especially important when it comes to climate change, as there is very little understanding of the impacts at the regional or state level and a significant need for Federal investment in this area. The outcome of this investment is the reduced vulnerability of coastal communities and the Federal treasury to the hardship and costs associated with climate-related natural hazards.

As coastal populations continue to increase (and coastal habitats continue to decline) their vulnerability to hazards resulting from climate change has also continued to increase (from winds, waves, and flooding generated by hurricanes and other major storms, as well as physical impacts caused by sea-level rise, coastal erosion, and long-term shoreline changes). Wetland loss is significantly increasing flood damage, costing states such as Florida and Texas millions of dollars per year (*Examining the Relationship between Wetland Alteration and Watershed Flooding in Texas and Florida*, Brody et al 2007). Coastal managers need science-based information and tools to make better land use, habitat conservation, evacuation planning, and infrastructure decisions to ensure that their coastal economies, communities, and ecosystem services can resist and rebound from climate-related hazards.

A recent survey of coastal state management programs found that 84 percent of the participating states, commonwealths, and territories are planning to develop sea-level rise adaptation plans (*The Role of Coastal Zone Management Programs in Adaptation to Climate Change*, CSO 2008). They are looking to NOAA, with our mandates to both predict and mitigate weather, climate, and ecosystem hazards impacts, to provide much of the data and information they need to develop these plans. This increase will directly address these needs by providing coastal communities with products and services that will help them address both the risks associated with natural hazards today and the potential increased impacts of those hazards tomorrow due to climate change. The National Institute of Building Sciences has found that for every dollar invested in mitigation activities, the U.S. taxpayer saves four dollars in losses associated with natural hazards.

Base Resource Assessment:

The base resources for this activity are described in the Ocean Resources Conservation and Assessment base narrative.

Schedule and Milestones:

- FY 2012: Evaluate community-based and NWS operational storm surge model components and outputs for contributions to NOAA mission requirements for planning, evacuation, response and recovery
- FY 2012-2013: Develop Climate Change Adaptation Planning Guidelines with a focus on the Pacific Islands, Louisiana, Mississippi and Alabama
- FY 2013-2016: Produce region specific climate information products and decision support resources, conduct stakeholder workshops, and support grants for the Southeast and Pacific Islands with other regions in outyears
- FY 2013-2016: Develop routine, up-to-date sea level trend analysis at reference sites along U.S. coasts. Information contributes to understanding of global sea level rise trends
- FY 2013-2016: Provide training activities targeted to state and local officials, based on Guidelines produced in FY 2012-2013 (two per year)
- FY 2013-2016: Develop climate adaptation and hazards resilience planning tools that incorporate information on the value of ecosystem services (four per year)
- FY 2013-2014: Establish storm surge test environment infrastructure and provide support for use by NOAA partners
- FY 2013-2014: Complete benchmark societal and economic impact assessment of public risk perception through the use of forecast (including watch/warning/storm surge) products
- FY 2014-2015: Develop coupled modeling system for total water level and evaluate forecast system in operational test environment
- FY 2015-2016: Couple automated forecast products with operational model output to develop forecast and decision support products
- FY 2012-2016: Provide coastal inundation modeling, mapping outreach, decision support tuning and training activities (four per year)
- FY 2013-2016: Conduct risk communication technical assistance activities for communities (15 per year)
- FY 2016: Complete final assessment of public risk perception from forecast (including watch/warning/storm surge) products

Deliverables:

- Risk and vulnerability assessment tools: e.g., decision support tools geared toward the most local level and built from digital elevation models and improved climate and storm surge model system which graphically show how coastal areas could be inundated and that allow communities to assess the tradeoffs of various weather and climate hazards management strategies, and tools for enhancing the resilience capacities of “green infrastructure” critical to protecting communities
- Region-specific climate information products through region specific workshops
- Coastal decision support resources (e.g., augment web portals, GIS tools) that integrate social, economic and climate data in useful and interactive formats

Performance Goals and Measurement Data

Performance Measure: Percentage of U.S. coastal states and territories demonstrating 20 percent or more annual improvement in resilience capacity to weather and climate hazards (%/yr),* Measure -18e	FY	FY	FY	FY	FY	FY
	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Increase	N/A	36%	41%	47%	53%	59%
Without Increase	30%	34%	36%	36%	36%	36%

Performance Measure: Number of regionally-focused climate impacts and adaptation studies, tools, and capacity-building utilized by coastal and emergency management	FY	FY	FY	FY	FY	FY
	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Increase	N/A	1	5	7	8	10
Without Increase	N/A	0	0	0	0	0

Description: This measure tracks the number of regionally-focused climate impacts and adaptation studies, tools, and capacity-building utilized by coastal and emergency management. The use of these products will improve management responses to climate change.

Performance Measure: Cumulative percentage of water level products, tools, or training accounting for inundation, water level, or uncertainty that improve risk management of coastal communities	FY	FY	FY	FY	FY	FY
	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Increase	N/A	10%	20%	20%	30%	30%
Without Increase	0	0	0	0	0	0

Description: Coastal managers need science-based information and tools to make better land use, habitat conservation, evacuation planning, and infrastructure decisions to ensure that their coastal economies, communities and ecosystem services can resist and rebound from hazards. This measure tracks the percentage of products that result in improved risk management at the community level. NOAA would improve the percentage of products, tools, and training used that improves the ability of coastal communities to manage risk and make informed decisions over time.

PROGRAM CHANGE PERSONNEL DETAIL

Activity: National Ocean Service
 Subactivity: Ocean Resource Conservation and Assessment

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Physical Scientist Coastal Management Specialist	Asheville, NC	ZP-04	1	81,823	81,823
Physical Scientist	Honolulu, HI Silver Spring, MD	ZP-04	1	75,057	75,057
Total			<u>3</u>		<u>245,913</u>
less Lapse		25%	<u>1</u>		<u>61,478</u>
Total full-time permanent (FTE)			2		184,435
2011 Pay Adjustment (0%)					0
2012 Pay Adjustment (0%)					<u>0</u>
TOTAL					184,435

Personnel Data	Number
Full-Time Equivalent Employment	
Full-time permanent	2
Other than full-time permanent	1
Total	<u>3</u>
Authorized Positions:	
Full-time permanent	2
Other than full-time permanent	1
Total	<u>3</u>

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Subactivity: Ocean Resource Conservation and Assessment

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	184
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	184
12 Civilian personnel benefits	52
13 Benefits for former personnel	0
21 Travel and transportation of persons	183
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	25
25.1 Advisory and assistance services	0
25.2 Other services	2,016
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	100
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	1,440
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	4,000

Coastal Services Center: Gulf of Mexico Coastal and Marine Elevation Pilot (Base Funding: 0 FTE and \$0; Program Change: +0 FTE and +\$2,000,000):

NOAA requests an increase of \$2,000,000 and 0 FTE for a total of \$2,000,000 and 0 FTE to support a joint project with the Department of Interior (i.e., USGS and BOEMRE) to develop a national integrated high-resolution topographic and bathymetric dataset to address a range of high priority coastal issues including coastal and marine spatial planning (CMSP), modeling climate impacts, and ecosystem assessments. This includes strong interagency collaboration related to data collection, modeling, data standards, information access, and other foundational elements needed to develop an end-to-end, integrated, ocean and coastal mapping program. Due to the critical nature of the issues facing the Gulf region, NOAA will begin pilot efforts in MS and LA in support of the Gulf Coast Ecosystem Task Force, a sub-working group of the Gulf Coast Recovery Task Force, and the Interagency Working Group on Long Term Disaster Recovery; and later expand to other regions of the country.

Proposed Actions:

With the requested funding, NOAA will work across Federal agencies, along with regional, state, and local constituent groups to pilot successful integrated ocean and coastal mapping in the Northern Gulf of Mexico with expansion to other priority regions. Accurate, high-resolution, topographic and bathymetric data provide an essential baseline and seamless framework for any coastal and marine spatial planning effort. NOAA's Digital Coast will provide the data integration and delivery platform for the integrated topographic and bathymetric dataset and will also facilitate and highlight examples of how the data are used to address high-priority coastal issues. In response to prioritized requirements for new data collection assembled by these partners, as well as ongoing interactions with the academic community and the Sea Grant program, NOAA will work cross-agency to address known gaps and deliver results through the Digital Coast thereby enabling improved decision making along our coasts.

Specific actions include the following:

- Conduct a regional assessment and workshop with Federal, state, regional, local, private sector, and non-governmental organizations. The assessment will identify relevant ocean and coastal management issues for the region, determine the availability and characteristics of existing topographic and bathymetric data, identify gaps to be filled, and assess technologies needed for data acquisition (\$40K).
- Prioritize and coordinate data collection activities for the region. Based on the workshop results and predetermined criteria, a data collection plan will be developed and implemented from 2012 to 2016. Existing data collection efforts will be leveraged to optimize the area that will be covered (\$1,850K).
- Provide easy access to, and disseminate all, topographic and bathymetric data, including associated metadata, and demonstrate how the data is being used to address coastal management issues. All data will be managed and made accessible via the Digital Coast which allows users to search and download data and will include web-based tools to allow users to visualize the changes over time (\$60K).
- Provide training to constituents on data acquisition and processing techniques, as well as the applied uses of topographic and bathymetric data, to address coastal and marine spatial planning issues (\$50K).

These activities will be conducted in close coordination with DOI, the U.S. Army Corps of Engineers (USACE), and other Federal partners. NOAA and DOI will coordinate Integrated Ocean and Coastal Mapping (IOCM) efforts through the Ocean and Coastal Mapping

Integration Act of 2009. It is anticipated that the USGS will continue to collect the majority of topographic data for the region, while NOAA will focus its data collection efforts on the associated bathymetry. NOAA will then work with USGS and the USACE to achieve consistent data standards and integration procedures and distribute the seamless data through the Digital Coast. NOAA's ongoing partnership with BOEMRE to develop the Multipurpose Marine Cadastre, in support of CMSP, will provide applied uses and case studies to demonstrate utility of the data.

Statement of Need and Economic Benefits:

NOAA's 2006 Coastal Resource Management Customer Survey documented a clear national need for topography and bathymetry. This need was echoed by both the Digital Coast partners and the Gulf of Mexico Alliance needs assessment which identified bathymetry as a priority data requirement for habitat restoration.

According to a study by the U.S. Geological Survey, Louisiana is projected to experience an average net land loss of just over 10 square miles of land per year from 2000 to 2050 (*Historical and Projected Coastal Louisiana Land Changes: 1978-2050*: USGS Open File Report OFR 03-334, Revised January 2004) In addition, it is estimated that approximately 200 square miles of land loss can be attributed to Hurricanes Katrina and Rita alone (*Land Area Change in Coastal Louisiana: A Multidecadal Perspective (from 1956-2006)*: U.S. Geological Survey Scientific Investigations Map 3019, scale 1:0250,000, 14 p. pamphlet). Louisiana land loss constitutes approximately 80 percent of the annual coastal wetland loss in the United States over the last 60 years (*USGS Northern Gulf of Mexico Ecosystem Change and Hazard Susceptibility Project*, 2009). Rapid erosion of Mississippi's barrier islands severely threatens the state's coastal communities, impeding their natural ability to offer critical storm protection to coastal ecosystems. Ecological damage in the region has led to the loss of key ecosystem services, which in turn has resulted in many negative economic and environmental consequences for both the region and the Nation. Faced with increasing vulnerability of coastal communities, coastal and emergency managers have expressed a need for comprehensive, timely and accessible information to aid in making decisions at critical times. This increase will provide the foundational data and geospatial framework needed to measure changes in coastal elevation and nearshore bathymetry, delivering critical data to monitor and mitigate the impacts of coastal erosion, habitat loss, and coastal inundation (including sea level rise).

The Northern Gulf Coast is a nationally-significant ecosystem that plays a crucial role in the Nation's economy. One quarter of all domestically consumed oil and gas travels by pipeline through coastal Louisiana's wetlands and marshes (*USACE Louisiana Coastal Area Ecosystem Restoration Study*, 1999). The decomposition of wetlands and barrier islands leaves critical energy infrastructure exposed to open water (e.g., wave and tidal damage, threats of collisions) and vulnerable to storm damage. Maritime commerce is also a major concern within the region, as seven of the Nation's 10 leading ports in waterborne tonnage are found in the Gulf of Mexico. Coastal Louisiana and Mississippi commercial fisheries account for nearly 30 percent of the total catch by weight in the contiguous United States. The Louisiana Department of Wildlife and Fisheries' 2005 preliminary estimates of losses to the state's seafood industry as a result of Hurricane Katrina were \$1.3 billion (annual total retail value), representing about 40 percent of the industry's annual total retail value (*National Marine Fisheries Service, NOAA, 2007d*). The region's non-commercial fisheries value is equally significant, totaling approximately \$1 billion annually. However, the viability of coastal Louisiana and Mississippi's fisheries is tied to the health of the regions wetlands, marshes, and barrier islands, which serve as a nursery to juvenile fish and crustaceans. Impacts from Hurricanes Katrina and Rita continue to serve as additional drivers for improved storm surge modeling in the region.

These issues in the Gulf are indicative of the scale and complexity of problems faced in other regions of the country as well. Following pilot activities in Mississippi and Louisiana, this effort will be expanded to other parts of the country. This geospatial framework, jointly developed with USGS and BOEMRE and the Digital Coast partnership, will allow for more effective, data-driven decisions at state and local levels regarding habitat restoration, and will enable more comprehensive coastal and marine spatial planning to analyze current and anticipated ocean uses related to energy, fisheries, and navigation. Ultimately, the data and related interagency expertise will inform science-based decision-making to reduce user conflicts and environmental impacts, facilitate compatible uses, and preserve critical ecosystem services.

Base Resource Assessment:

The base resources for this activity are described in the Ocean Resources Conservation and Assessment base narrative.

Schedule and Milestones:

- FY 2012: Leverage existing regional and national assessments to identify data gaps in the Northern Gulf of Mexico
- FY 2012: Work with local, state, regional, non-governmental and Federal organizations to prioritize and coordinate data collection activities for the region
- FY 2012-2016: Develop and implement a data collection plan, leveraging existing data collection efforts to optimize the area that will be covered
- FY 2012-2016: Identify data collection parameters and initiate contract platforms to acquire topographic and bathymetric data for the Gulf Region
- FY 2012-2016: Disseminate and provide easy access to all topographic and bathymetric data via NOAA's Digital Coast, including associated metadata, and demonstrate how the data are being used to address coastal management issues
- FY 2012-2016: Prior to final data delivery, provide training to constituents on data acquisition and processing techniques, as well as the applied uses of topographic and bathymetric data, to address coastal and marine spatial planning and other coastal management issues

Deliverables:

- Gulf of Mexico regional assessment of priority needs and gaps associated with topographic and bathymetric data
- Integrated, high-resolution topographic and bathymetric dataset for the Mississippi and Louisiana coasts, provided via Digital Coast
- Training delivered to Gulf constituents relative to the collection, processing and application of topographic and bathymetric data

Performance Goals and Measurement Data

Performance Measure: Annual number of square miles of topographic and bathymetric data collected and disseminated through the Digital Coast	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	N/A	0	350	350	350	350
Without Increase	0	0	0	0	0	0

Description: This measure tracks the area covered with new topographic and bathymetric data collections. Costs associated with topographic data collection are consistent and easily projected. Costs associated with bathymetric data collection are dependent upon water depth and are highly variable; therefore, the projected the area of coverage is an estimate. Data collection will begin in late 2012.

Performance Measure: Cumulative number of MS and LA decision makers accessing and/ or trained in applying NOAA data (topography and bathymetry) and data standards to improve management of coastal and marine ecosystems	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	N/A	0	70	160	250	325
Without Increase	0	0	0	0	0	0

Description: This measure tracks the number of decision-makers (e.g., state and local planners, resource managers, emergency managers, etc.) who are trained to apply NOAA data and data standards for elevation collected and developed through this effort or who are directly applying those data to address coastal and emergency management challenges. The data collection and processing will begin in late FY 2012 and FY 2013 and as the targets in this measure focus exclusively on the interactive training to apply the data; targets begin in FY 2013 and ramp up over time.

*The targets in these performance measures are limited to this initiative and do not capture activity conducted through the Coastal Services Center and other NOAA programs.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Subactivity: Ocean Resource Conservation and Assessment

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	1,940
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	60
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	2,000

Coastal Services Center (Base Funding: 82 FTE and \$30,299,000; Program Change: -0 FTE and -\$6,000,000): NOAA requests a decrease of \$6,000,000 and 0 FTE for a total of \$24,299,000 and 0 FTE for the Coastal Services Center. In the Consolidated Appropriations Act, 2010, Congress provided an additional \$6,000,000 in funding for activities within the Coastal Services Center. These resources supported the Community Resilience Networks program which funds projects that help communities become more resilient to threats posed by coastal hazards and a variety of special projects at the Pacific Services Center. These additional funds are not required in FY 2012 as the President's Request includes funding to support essential operations at the Coastal Services Center (CSC) as well as new initiatives that will help develop geospatial data and tools and address important coastal issues. This, in turn, will enable more effective and targeted implementation of the Coastal Zone Management Act (CZMA) and other relevant coastal legislation.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Subactivity: Ocean Resource Conservation and Assessment

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(6,000)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(6,000)

Coral Reef Program: Coral Reef Institutes (Base Funding: 4 FTE and \$29,332,000; Program Change: -0 FTE and -\$2,273,000): NOAA requests a decrease of \$2,273,000 and 0 FTE for a total of \$27,059,000 and 4 FTE. In the Consolidated Appropriations Act, 2010, Congress provided \$2,273,000 in competitive funding for external coral reef institute partners. These funds were awarded to projects in FY 2010 and no additional funding is required. In FY 2012, the CRCP intends to allocate approximately \$8.6 million in competitive grants. The external coral reef institutes are encouraged to apply for funding through the CRCP's Domestic Coral Reef Conservation Grants program and the National Fish and Wildlife Foundation's Coral Fund. The President's FY 2012 Request includes \$27,059,000 for the Coral Reef Conservation Program (CRCP), which will allow NOAA to continue to address the complex nature of the threats that face coral reef ecosystems and to bring together expertise from across NOAA for a multidisciplinary approach to understanding and managing coral reef ecosystems. The CRCP addresses NOAA's legislative mandates to protect and conserve coral reefs (Coral Reef Conservation Act of 2000 and the Presidential Executive Order 13089 on Coral Reef Protection, which established the NOAA-co-chaired U.S. Coral Reef Task Force), recover threatened corals and other protected species (ESA), manage reef-dependent Federal fisheries and protect Essential Fish Habitat including deep coral and sponge communities (Magnuson-Stevens Fishery Conservation and Management Act (MSA)), promote sustainable use of the coastal zone under the Coastal Zone Management Act (CZMA), and improve management capabilities of the National Marine Sanctuaries Act (NMSA).

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Subactivity: Ocean Resource Conservation and Assessment

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(2,273)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(2,273)

Response and Restoration Base: Strengthening Oil Spill Response and Restoration Research and Development (Base Funding: 0 FTE and \$0; Program Change: +0 FTE and +\$2,900,000): NOAA requests an increase of \$2,900,000 and 0 FTE for a total of \$2,900,000 and 0 FTE to develop an oil spill research and development program.

Proposed Actions:

NOAA's Office of Response and Restoration (OR&R) is the lead trustee for the public's coastal natural resources and an international scientific leader for oil spill response, assessment, and restoration. The requested resources will be used to develop strong leadership in oil spill research, response, assessment, and restoration research. This program will address concerns by implementing additional focused peer reviewed research, and by communicating research results and recommendations to key decision makers. The goal of this program will be to conduct research to provide useful information, methods and tools for planners, oil spill responders, and assessment practitioners. The funds would support external grants that are coordinated with the Interagency Coordinating Committee for Oil Pollution Research (ICCOPR) as well as the National Oceanographic Partnership Program (NOPP). The grants will be focused on priority oil spill research areas, including:

- **Oil Fate and Behavior from Deepwater Releases** - As the Deepwater Horizon oil spill is demonstrating, there is a need to study how oil behaves and disperses within the water column when released at great depths, and to understand the effects of oil on mid-water and deep water benthic habitat.
- **Long-Term Effects on Species and Habitats** - Research is needed to improve our understanding of the long-term effects of oil on sensitive and economically important species and habitats. Continued research is also needed to determine the effects of oil and dispersants that are suspended in the water column on mid-water and pelagic species, and the effects of oil on deep water corals.
- **Research to Improve Tools for Assessment and Restoration** - As our understanding of complex ecosystems evolves, so should our modeling tools and restoration techniques. Research and tools to better assess and quantify natural resource services — such as water filtration/capture, flood protection, carbon sequestration, recreation, and education — across a range of habitat types can help ensure the public is fully compensated and the environment fully restored.
- **Oil in Arctic Environments** – Research is needed to better understand environmental conditions in the Arctic, which is important for conducting injury assessments and developing restoration strategies. Research is also needed to better understand the challenges of spill response in Arctic waters and the most effective tools and techniques to utilize in such environments.
- **Human Dimensions** - Research is needed on how to incorporate impacted communities into the preparedness and response processes to help to address the human dimensions of spills, including social issues, community effects, risk communication methods, and valuation of natural resources.

Statement of Need and Economic Benefits:

The public has high expectations for a prompt and effective cleanup following an oil spill, and responders must be equipped with the appropriate tools and information to help meet those expectations. The Deepwater Horizon spill has highlighted the longstanding need for stronger oil spill research and development on issues such as environmental impacts of dispersants, fate and transport of oil at deep depths, medium and long term forecasting of oil fates, risk communication with the public, and long term impacts of oil on shorelines. Strong science is critical to effective decision-making to minimize the economic impacts and mitigate the effects of oil spills on coastal and marine resources and associated communities. A robust research and development program can improve response effectiveness. It is important that we continue this work between spills so that we can develop the tools and understanding before, rather than during, the next big spill. Applying the latest science and continuing research and development can improve our response decisions, thereby reducing the severity of oil spill injuries to our Nation's economy and environment.

Congress recognized the need for oil pollution research when they passed the Oil Pollution Act of 1990 (OPA), yet with fewer large oil spills and competing national priorities, there has been a decline in oil spill research in both the private and public sectors. Existing research has resulted in advancing some response technologies; however, more should be done to strengthen our Nation's response capabilities, especially in deep water and Arctic environments. The Deepwater Horizon oil spill is a stark reminder that spills of national significance can occur despite the many safeguards and improvements that have been put into place since the passage of OPA. The risk of oil spills remains a concern given increases in marine transportation; efforts to develop domestic areas for drilling offshore; aging infrastructure (listed as #11 in the Ernst & Young Business Risk Report 2010: The Top 10 Risks for Oil and Gas) and frequent and increasingly more intense storms in U.S. coastal areas; and opening the Arctic to both shipping and oil development. The Nation is especially challenged to respond to oil spills in the Arctic as many of today's standard approaches to oil spill response, clean-up, and restoration are expected to be significantly less effective in the arduous conditions of the Arctic.

Oil spill preparedness and responses would greatly benefit from incorporating current science, information technology, and real-time observational data into response decision-making. The economic and environmental benefits of improved decision-making during incident responses are clear. For example, better understanding of where the oil is and where it will go will help NOAA make money-saving decisions related to fisheries closures, navigation closures, and protecting critical habitats. The requested funds will allow NOAA to address those unanswered questions through a robust research and development program that will allow for better decision making and more effective and informed responses.

Benefits of improving spill response and reducing injury to natural resources can be quantified using several indicators. For more than 15 years, NOAA's Office of Response and Restoration has recovered more than \$437 million for the protection and restoration of coastal resources after spills and waste site releases.

Base Resource Assessment:

The base resources for the Office of Response and Restoration are described in the Ocean Resources Conservation and Assessment base narrative. NOAA does not currently have an operational oil spill research and development program; however, in FY 2004 – FY 2007 NOAA received funding for the Coastal Response Research Center (CRRC) to conduct scientific studies on oil spill research and development.

Schedule and Milestones:

- Work closely with ICCOPR and NOPP to establish competitive process to fill high priority data gaps
- Fund 16 multi-year grants per year focused on high priority oil spill research and development (FY 2012-2016)
- Summarize and deliver results to decision-makers

Deliverables:

- Program Summary and Objective Statements
- Research plan
- Statement of Work/Request for Proposals
- Annual summaries of research findings and conclusions
- Recommendations for future research and other actions

Performance Goals and Measurement Data

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Number of research projects funded to advance priority spill response understanding	Target	Target	Target	Target	Target	Target
With Increase	n/a	16	16	16	16	16
Without Increase	0	0	0	0	0	0
Description: This measure will track the number of multi-year research projects funded through this program.						

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Number of tools developed or enhanced that increase the effectiveness of oil spill response and restoration	Target	Target	Target	Target	Target	Target
With Increase	n/a	9	9	9	9	9
Without Increase	0	0	0	0	0	0
Description: NOAA’s OR&R research program will support applied research that will focus on improving oil spill response and restoration effectiveness. In collaboration with our Federal, state, academic partners, and emergency responders, OR&R will identify priority research areas to fund. The outcome of the research will be used to develop products/tools that will address the priority research areas and ultimately improve the effectiveness of oil spill response and restoration.						

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Subactivity: Ocean Resource Conservation and Management

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	900
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	2,000
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	2,900

Response and Restoration: Undersea Threats Assessment Initiative (Base Funding: 0 FTE and \$0; Program Change: -0 FTE and -\$1,000,000): NOAA requests a decrease of \$1,000,000 and 0 FTE for a total of \$0 and 0 FTE, ending a one-time solicitation program for an independent undersea threats assessment and analysis. In the Consolidated Appropriations Act, 2010, Congress provided \$1,000,000 for a one-time independent assessment of potential man-made undersea threats. This solicitation was completed and funding is not required in FY 2012. In light of the Deepwater Horizon oil spill, the President's FY 2012 Request includes \$2,900,000 for oil spill research and development efforts.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Subactivity: Ocean Resource Conservation and Assessment

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(1,000)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(1,000)

Estuary Restoration Program (Base Funding: 5 FTE and \$3,000,000; Program Change: -0 FTE and -\$1,812,000): NOAA requests a decrease of \$1,812,000 and 0 FTE for a total of \$1,188,000 and 5 FTE. In the Consolidated Appropriations Act, 2010, Congress provided additional funds for estuary restoration. These funds were used to complete projects including:

- the Port Susan Bay Estuary Restoration project in Washington to reintroduce the full tidal prism and inundation regime to 150 acres of diked farmland in the Stillaguamish River estuary in Puget Sound;
- Phase II of the Damde Meadows Tidal Restoration in Massachusetts to restore full tidal hydrology to Damde Meadows, a 15-acre salt marsh located in the heart of the Boston Harbor Islands National Recreation Area;
- the McDaniel Slough Tidal Restoration in California to restore and enhance 22 acres of tidal wetlands and 23.5 acres of freshwater wetlands; and
- the Molokai Fish Pond & Fringing Reef Restoration project in Hawaii to remove invasive mangroves and invasive marine algae from inside two 15th century fish ponds.

Grant funds were sufficient for recipients to complete priority restoration projects in FY 2010 and FY 2011 and additional funding is not required for these projects in FY 2012. The Estuary Restoration Act (ERA) makes restoring our Nation's estuaries a national priority and NOAA will continue to support estuary restoration and enhancement projects through the National Response and Restoration Program. In addition, the President's FY 2012 Request includes an additional \$5,044,000 for NOAA's Community Based Restoration Program, which will benefit similar activities.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Subactivity: Ocean Resource Conservation and Assessment

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(1,812)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(1,812)

National Centers for Coastal Ecosystem Science: Coastal Ecosystem Science (Base Funding: 0 FTE and \$900,000; Program Change: +0 FTE and +\$1,000,000): NOAA requests an increase of \$1,000,000 and 0 FTE for a total of \$1,900,000 and 0 FTE to expand the Mussel Watch program and to refresh laboratory equipment at the National Centers for Coastal Ocean Science.

Proposed Actions:

This increase will allow NOAA to:

- ***Enhance NOAA's Mussel Watch Program (\$0.5M):*** Funds are requested to expand existing partnerships with NIST, USGS, EPA, and state and local agencies to maintain and enhance NOAA's Mussel Watch Program. The program will establish monitoring sites in coastal areas currently under-represented, increase sampling and analysis of pollutants by 30 percent, and increase the number of pollutants currently monitored and assessed through NOAA's Mussel Watch Program by 50 percent.
- ***Laboratory Equipment Maintenance and Refresh (\$0.5M):*** Funds are requested to invest in new laboratory equipment to maintain NOAA's leadership in coastal and ocean ecosystem science. Much of NOAA's laboratory equipment is aging and NOAA has not had the funds to replace the equipment. In addition, funds are requested to invest in service contracts to maintain NOAA's highly specialized lab equipment which is vulnerable to scientific failures, comply with applicable regulatory health, safety and environmental standards and ensure the safety and health of the cross-NOAA workforce and state and Federal partners who utilize these facilities. Investments in maintaining and modernizing equipment are critical for employee health and safety and necessary to operate the technical infrastructure that supports NOAA's core competencies in Ecosystem-based Management and supporting coastal communities and economies.

Statement of Need and Economic Benefits:

Coastal communities contain over half of the U.S. population and generate nearly 60 percent of the U.S. economy via tourism, recreation, commercial fisheries and commerce (Crossett et al., 2004). However, land-based discharges of trace metals, pesticides, pharmaceutical agents and pathogens from industrial, urban and agricultural sources negatively impact human health, impair coastal ecosystems, close beaches, and devastate coastal communities that rely on tourism and recreation as sources of income to achieve economic and environmental sustainability. Over 50 percent of the Nation's estuaries experience hypoxia (CENR 2003). Time-critical investments in research and applied science will fill gaps in NOAA's capacity to protect lives, promote healthy economies and improve human health, reduce the high costs associated with contamination clean-up and potential human health impacts, and respond to Administration priorities, the National Ocean Policy and NOAA's legal mandates.

NCCOS's contamination research and assessment programs provide leadership at the national level to assess the long-term patterns and extent of contamination of coastal resources that threaten ecosystem and human health. NCCOS partners with state, local and tribal agencies along the U.S. West Coast; Federal agencies such as the USGS, EPA, and FDA; the Canadian Government (to document highly contaminated areas in the Great Lakes); and the Gulf Watch Contaminants Monitoring Program (administered by the Gulf of Maine Council on the Marine Environment). Investments in NOAA's Mussel Watch Program will provide input to Federal, state, local and tribal partnerships and programs charged with managing the Nation's water quality and determining impacts and remediation strategies for Natural Resource Damage Assessment (NRDA) cases.

Investments in laboratory operations and maintenance supported by this request will dramatically facilitate strategic partnerships and protect NOAA’s existing investments in research equipment as well as the leveraged resources of our partners.

Base Resources Assessment:

The base resources for the National Centers for Coastal Ocean Science are described in the Ocean Resources Conservation and Assessment base narrative. NCCOS’ intramural research efforts will respond to harmful algal blooms (32 percent), support coastal and marine spatial planning (25 percent), assess the impacts of climate change (5 percent) and coastal contamination (38 percent), with a focus on CECs, including pharmaceuticals, endocrine disrupting compounds, flame retardants, and nanoparticles.

Schedule and Milestones:

- Mussel Watch CEC Early Warning Network in California (FY 2013), Nationwide (FY 2016)
- Pathogen and CEC analytical methods, and fate, transport, and toxicology assessments (FY 2012+)

Deliverables:

- National Mussel Watch contaminant and monitoring program
- Models and tools to evaluate contaminant effects on marine resources (FY 2014+)
- Sustained partnerships with public health partners at Federal and state levels
- Invest in new laboratory equipment and service contracts to maintain NOAA’s highly specialized lab equipment which is vulnerable to scientific failures, comply with applicable regulatory health, safety and environmental standards and ensure the safety and health of the cross-NOAA workforce and state and Federal partners who utilize these facilities

Performance Goals and Measurement Data

Performance Measure: Number of coastal, marine and Great Lakes ecosystem sites adequately characterized for management (Measure 18a NCCOS contribution only)	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	N/A	20	23	26	29	33
Without Increase	15	16	16	16	17	17

Description: Ecological characterizations provide the scientific basis for coastal and ocean assessments and forecasts, and the development of plans to manage resources and assess the effectiveness of measures implemented to effectively manage natural resources. Characterizations are conducted on NOAA trust resources, essential fish habitats, Great Lakes habitats and living resources and throughout the Nation’s coastal zone.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Subactivity: Ocean Resource Conservation and Assessment

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	50
22 Transportation of things	50
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	10
25.1 Advisory and assistance services	0
25.2 Other services	540
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	350
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>1,000</u>

National Centers for Coastal Ecosystem Science: Oceans and Human Health (Base Funding: 2 FTE and \$4,000,000; Program Change: -0FTE and -\$2,000,000): NOAA requests a decrease of \$2,000,000 and 0 FTE for a total of \$2,000,000 and 2 FTE for the Oceans and Human Health program. The President's FY 2012 Request includes \$2,000,000 for the Oceans and Human Health which will allow NOAA to assess, understand and predict the connections between the condition of oceans, coasts, Great Lakes waters, and human health while providing information focused on reducing current and future risks to public health and enhancing efforts to provide curative agents and natural products from the sea Oceans and Human Health Act (OHHA) through base National Centers for Coastal Ocean Science (NCCOS) Program funding.

Proposed Actions:

The combined pressures of coastal development, changes in watersheds and climate change on our ocean and coastal systems pose both immediate and long term human health threats from disease-causing pathogens, contaminants and biotoxins. Funds will implement the Oceans and Human Health Act (OHHA) through the cross-NOAA Oceans and Human Health Initiative by:

- A) *Advancing NOAA research, tools, and technology* through NOAA's Centers of Excellence in Oceans and Human Health through targeted development of develop risk assessment capacity and tools for health early warning systems for public health and resource managers, conduct strategic public information and outreach efforts to engage users in the entire process, and improve stakeholder understanding and capacity to use NOAA oceans and human health products and services;
- B) *Increasing external partnerships and graduate and postdoctoral traineeships* to provide NOAA with premier research community expertise and build a cadre of future scientists who will help solve complex, interdisciplinary problems associated with oceans and human health, and who will become the NOAA and academic workforce of the future.

Statement of Need and Economic Benefits:

Coastal communities contain over half of the U.S. population and generate nearly 60 percent of the US economy via tourism, recreation, commercial fisheries and commerce (Crossett et al., 2004). According to the Natural Resources Defense Council, in 2008, beach pollution prompted 20,341 closing and swimming advisory days at ocean, bay and Great Lakes beaches, and exposure to bacteria, viruses and parasites in contaminated beachwater can cause a wide range of diseases, including ear, nose and eye infections, stomach flu, hepatitis, encephalitis, skin rashes, and respiratory illnesses. And complex environmental stressors are leading to other rapid changes as well.

Support for the Oceans and Human Health Initiative will ensure a coordinated approach to conducting research and delivering tools and early warnings of health risks to people and marine animals. By identifying, developing, and providing useful environmental information to its key public health partners, NOAA can bring its expertise to bear to help ensure the citizens and visitors of the United States a cleaner, safer, healthier ocean and coastal environment in which to live, play, and work. Partnerships with the academic and private sector communities will be strengthened and the next generation of scientists and policy makers will be able to work at the interface of ocean health and human health. The OHHI is critical to accomplishing the operational tasks required to assess and forecast regionally-relevant ocean health risks. Finally, the OHHI provides the institutional framework, scientific capacity, programmatic coordination, and links with IOOS and the public health community needed to develop an integrated system to detect, predict and mitigate coastal threats from microbial or chemical contaminant.

Healthier oceans and coasts, and healthier people make more resilient and economically productive communities—especially as these communities grow in density and their population ages. These communities are better able to adapt and withstand anomalous health impacts, coastal ecosystem changes due to climate and extreme weather events, and remain economically stable.

Base Resources Assessment:

The base resources for the Ocean and Human Health Initiative are described in the National Centers of Ocean and Coastal Science section of the Ocean Resources Conservation and Assessment base narrative.

Schedule and Milestones:

- Develop predictive models and assessments to assess human health risk from exposure to pathogens, contaminants, or biotoxins (two new tools per region starting in FY 2012)
- Identify groups at most risk of exposure/harm and documented behaviors affecting exposure to coastal and ocean health risks and contributing to coastal pollution (FY 2012-2014)
- Spatially depict human resource use patterns affecting human health in coastal areas (FY 2012+)
- Increased number of graduate and post-doctoral students trained in Oceans and Human Health-related sciences.
- Complete laboratory and technical equipment refreshment/maintenance (FY 2012+)

Deliverables:

- Surveys and socioeconomic analyses identifying behaviors contributing to pollution and exposure to health risks from water-borne diseases
- Models and datasets documenting and predicting how social, cultural, and economic factors affect the sustainable management of coastal and ocean ecosystems and protect the health and well-being of coastal communities (FY 2012+)
- Assessment of potential risk from vibrios and other seafood related health risks (one per region)
- Prediction tools and information and GIS products to reduce beach closures and reduce human exposure to pathogens (one per region)
- Sustained partnerships with public health partners at Federal and state levels

Performance Goals and Measurement Data

Performance Measure: Percentage of health early warning tools, technologies, and information services that are used by NOAA partners/customers to reduce health risks from the oceans and coasts	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
	Target	Target	Target	Target	Target	Target
With Increase	N/A	20%	20%	25%	25%	30%
Without Increase	10%	10%	10%	10%	10%	10%

Description: Science-based health early warning systems inform managers and health officials about pending human health risks. These systems result in public health warnings and warrant potential behavioral changes to decrease risks and associated health impacts. The goal is to increase the percentage of the ten U.S. Large Marine Ecosystems with operational science-based health early warning systems from 10 percent to 50 percent.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Subactivity: Ocean Resource Conservation and Assessment

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(1,000)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(1,000)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(2,000)</u>

National Centers for Coastal and Ocean Science (NCCOS) (Base Funding: 0 FTE and \$39,522,000; Program Change: -0 FTE and -\$2,312,000): NOAA requests a decrease of \$2,312,000 and 0 FTE for a total of \$37,210,000 and 0 FTE for the National Centers for Coastal Ocean Science (NCCOS). In the Consolidated Appropriations Act, 2010, Congress provided \$2,312,000 in additional funding for interdisciplinary science, information and decision support tools to improve coastal management and stewardship. These funds were used to supplement base funding to support research, monitoring, assessment and technical assistance for managing coastal ecosystems. This additional funding is no longer required in FY 2012 as the President's FY 2012 Request includes \$38,210,000 to provide national leadership in ocean, coastal, and Great Lakes science by conducting research, monitoring, and assessments to build the strong scientific foundation essential for sustainable use of coastal resources. NCCOS integrates its expertise and efforts across all levels of government through a variety of interagency task forces and has established partnerships with NIST, EPA, USGS, NPS, and CDC, academic institutions and coastal community resource managers and public health officials. Coordinating activities with partner organizations, NCCOS ensures research activities meet the highest priority science needs, provide a balanced response to local, regional and national issues and are utilized by decision makers to sustain the viability of coastal ecosystems and communities.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Subactivity: Ocean Resource Conservation and Assessment

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(2,312)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(2,312)

National Centers for Coastal Ecosystem Science: Competitive Research (Base Funding: 0 FTE and \$16,000,000; Program Change: -0 FTE and -\$199,000): NOAA requests a decrease of \$199,000 and 0 FTE for a total of \$15,801,000 and 0 FTE for the National Centers for Coastal Ocean Science (NCCOS) Competitive External Research program. In the Consolidated Appropriations Act, 2010, Congress provided an additional \$199,000 in competitive research funding for NCCOS. This funding was competitively awarded for projects in FY 2010, and no additional funding is required for these projects. The President FY 2012 Request includes \$15,801,000 for the NCCOS Competitive Research Program, which will allow NOAA to provide comprehensive national leadership in ocean, coastal, and Great Lakes science by conducting research, monitoring, and assessments to build the strong scientific foundation essential for sustainable use of coastal resources and builds better linkages among the coastal programs of NOS by developing and maintaining a broad base of scientific experts and science capabilities through both intramural and extramural research. NOAA's legislative mandates under the Harmful Algal Bloom and Hypoxia Research and Control Act, the Coastal Zone Management Act, the National Coastal Monitoring Act, the Oceans and Human Health Act, the Coral Reef Conservation Act, and the Great Lakes Task Force Executive Order will continue to be supported by base NCCOS National Program funding.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Subactivity: Ocean Resource Conservation and Assessment

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(199)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(199)

APPROPRIATION: OPERATIONS, RESEARCH AND FACILITIES
SUBACTIVITY: OCEAN AND COASTAL MANAGEMENT

The objectives of the Ocean and Coastal Management subactivity are to:

- Maintain and improve the quality of the Nation's coastal lands and waters through a national network of federally approved, coordinated, and supported state management programs.
- Maintain the balance between resource protection and coastal-dependent economic activity, including coastal energy development.
- Provide technical assistance to states in the development, implementation, and improvement of state Coastal Zone Management programs and estuarine research reserves.
- Identify areas of the marine environment of special national significance due to their resource or human-use values.
- Implement the framework for a national network of Federal, state, tribal, and local marine protected areas.
- Support and coordinate scientific research on, and monitoring of, resources in protected areas.
- Coordinate the development of information, tools, strategies, and guidance to enhance and expand the protection of marine and estuarine protected areas.
- Protect and manage a system of nationally significant special marine areas through the National Marine Sanctuary System, a comprehensive conservation program.
- Enhance public education, awareness, and understanding of the marine and estuarine environment.
- Facilitate public/private uses of the resources of special marine areas compatible with resource protection.

To achieve these objectives, NOAA conducts activities in several program areas within the Office of Ocean and Coastal Resource Management (OCRM) and the Office of National Marine Sanctuaries (ONMS). These activities are conducted under the authority of the Coastal Zone Management Act (CZMA), the National Marine Sanctuaries Act (NMSA), Executive Order #13158 on Marine Protected Areas, and Presidential Proclamations 8031 and 8337.

The Ocean and Coastal Management subactivity contains two items: Coastal Management and Ocean Management.

COASTAL MANAGEMENT (<http://coastalmanagement.noaa.gov>)

The Nation's coastal and ocean areas represent some of its most ecologically and economically important regions. Coastal counties are also the most densely populated part of the U.S., an area that is on average two to three times more densely populated than the Nation as a whole. Congress recognized this fact in 1972 when it passed the Coastal Zone Management Act (CZMA). The CZMA declares that it is the national policy "to encourage and assist the states to exercise effectively their responsibilities in the coastal zone through development and implementation of management programs...giving full consideration to ecological, cultural, historic and esthetic values as well as the need for compatible economic development." The importance of these areas and the need for this program has been recognized not only by the CZMA, but more recently by the U.S. Commission on Ocean Policy and the National Ocean Policy.

Responding to this challenge, the CZMA created a national framework for coastal protection through the Coastal Zone Management program and National Estuarine Research Reserve System. In addition, Executive Order #13158 recognized the importance of coastal and marine protection by directing the Federal government to establish, significantly strengthen and expand the national

system of marine protected areas (MPAs), working closely with state, territorial, local and tribal trustees, and other stakeholders.

The Coastal Management program also carries out responsibilities mandated under the Coastal Zone Act Reauthorization Amendments of 1990 (the Coastal Nonpoint Pollution Control Program); the Department of Commerce, Justice, and State Appropriations Act of 2002 and Omnibus Public Land Management Act of 2009 (the Coastal and Estuarine Land Conservation Program), the Ocean Thermal Energy Conversion Act (provides licensing of proposed ocean thermal energy projects); and the Deep Seabed Hard Mineral Resources Act. In addition, this program supports implementation of several Administration policy directives, including: the National Ocean Policy and regionally-based initiatives (Chesapeake Bay and Louisiana/Mississippi Gulf Restoration Working Group). It also supports mandates under the Coral Reef Conservation Act that are implemented through CZMA partnerships (e.g. local coral reef action strategies implemented through state coastal management programs).

Through this program, NOAA provides financial assistance, national policy guidance, technical assistance, and other support to: implement 34 coastal management programs in partnership with states and territories (plus one under development in Illinois); research, education, training and stewardship at 28 National Estuarine Research Reserves; a competitive grant program to protect ecologically significant coastal lands, such as wetlands, natural shorelines and other important habitats that benefit coral reefs, migratory fish, and protected species (the Coastal and Estuarine Land Conservation Program); and a national system of marine protected areas to enhance marine resource protection. The CZMA also requires periodic reviews of approved state coastal and estuarine programs and oversight of loan repayments to the Coastal Zone Management Fund, establishes an awards program to recognize achievement in the field, and requires coordination with other agencies on proposed actions affecting the coastal zone.

This program operates through formal partnerships with states and territories, agreements with other Federal agencies, tribes, and also through a broad range of informal partnerships with non-governmental organizations. It has formal partnerships with 34 states and territories to carry out the CZMP, NERRS, CELCP and Coral Reef local action strategies, as well as interagency agreements and other partnerships with other Federal agencies, including EPA, FEMA, DOI (FWS, NPS, USGS, and BOEMRE), USDA, DOD, and the State Department. OCRM also participates actively on a number of regional ocean governance initiatives, including the Council of Great Lakes Governors, the Northeast Regional Ocean Council, Gulf of Maine Council, Mid-Atlantic Regional Collaborative (MARCO), West Coast Governors Initiative, and the Gulf of Mexico Alliance. Within the Department of Commerce, this program has: developed a partnership with the Economic Development Administration (EDA) to increase collaborative efforts within states and regions to support development and resilience of coastal economies; collaborated with the Census Bureau to determine status and trends in coastal population and the coastal economy; and developed environmental technologies, 13 of which have been awarded patents. The program also has extensive partnerships with non-governmental organizations, such as those representing state governors, state natural resource managers, city and county administrators, land use planners, floodplain managers, the fishing industry, ocean energy industry, and conservation organizations, among others.

The Coastal Zone Management Act specifies how the CZMP and National Estuarine Research Reserve System (NERRS) funds are to be allocated and the cost-share requirements for these programs. Operational funding is awarded through cooperative agreements with a lead state agency responsible for managing each approved coastal program and designated Reserve. Within these amounts, NOAA negotiates the tasks and funding within each cooperative agreement to target efforts at the state or local level that achieve the program's priorities, while leveraging additional state or local funding. In addition to cooperative awards, NOAA provides additional support through

competitive grants for NERRS Graduate Research Fellows and construction and acquisition projects. NOAA has also strengthened the way it allocates funds for system-wide improvements on the basis of merit, and has better aligned programmatic activities to address priority coastal management issues.

COASTAL ZONE MANAGEMENT GRANTS - The purpose of the national Coastal Zone Management (CZM) Program is to maintain and improve the Nation's coastal lands and waters through a national network of federally approved, coordinated, and supported state management programs. This program seeks to maintain the balance between the needs of resource protection and coastal-dependent economic activity. This program recognizes the significance of coastal resources to our Nation's population and economy and promotes improved management of these important assets. Federal matching funds are provided through cooperative agreements to support state CZM functions and community projects that address the broad spectrum of coastal management issues ranging from habitat conservation and protection of life and property from coastal hazards, to urban waterfront and port revitalization (Section 306/306A CZMA). There are currently 34 (out of 35 eligible) coastal and Great Lakes states, territories and commonwealths with federally approved coastal management programs, protecting more than 99 percent of the Nation's 95,331 miles of ocean and Great Lakes coastline. This state-based component is supported by the national CZM Program.

CZM funding is allocated using a formula based on shoreline mileage (60 percent) and coastal population (40 percent) of each state, and adjusted according to requirements for minimum and maximum amounts for each state or territory. Most of the CZM Grant funding is matched on a 1:1 basis (only CZMP enhancement funds do not require match).

In FY 2012, the Coastal Zone Management Program plans to increase effectiveness by better targeting grant funding to address significant national issues. NOAA has been working with the coastal management community to undertake a visioning effort to better define and prioritize those significant national issues. The results of this visioning effort will be reflected in the grants awards process, including increased competition in the Coastal Zone Enhancement grants (Section 309 CZMA).

NATIONAL ESTUARINE RESEARCH RESERVE SYSTEM (NERRS)

[\(http://www.nerrs.noaa.gov/\)](http://www.nerrs.noaa.gov/) - NERRS (Section 315 CZMA) is a national network of estuarine protected areas representing the diverse biological and physical characteristics of estuarine systems of the United States. Reserves are owned and operated by state agencies or universities. Reserves serve as living laboratories and local, regional, and national sources of scientific and technical information, training, and education on estuaries. The reserve system serves as a testing ground for the improvement of coastal resource management through direct resource management and restoration, science, and the translation and dissemination of information to coastal decision makers, teachers, students, and the public. There are currently 28 designated reserves in 22 states and territories covering over 1.3 million acres of estuarine lands and waters. NOAA added a 28th reserve in early FY 2011 with the designation of the Lake Superior Reserve in Wisconsin. This new reserve is supported through FY 2010 appropriations. In addition, the Governor of Connecticut has also submitted a request for the designation of a new reserve.

The NERRS allocates funding for site-specific programs as well as system-wide programs that achieve the program's objectives to protect estuarine areas, provide educational opportunities, promote and conduct estuarine research and monitoring, and transfer relevant information to coastal managers. The program is focusing on four priority topics: impacts of land use and population growth; habitat loss and alteration; water quality degradation; and changes in biological communities.

Federal NERRS funding (70 percent) is matched by the states (30 percent) for reserve operations, research, monitoring, training, education and facilities construction. Federal NERRS funding (50 percent) for land acquisition is also matched by the states (50 percent). Base funds for NERRS support science, education and stewardship programs, reserves operations, and the “NERRS Science Collaborative.” In FY 2009, the program educated more than 11,400 students and teachers about estuaries through NERRS Estuary Live and National Estuaries Day activities; trained more than 7,400 coastal decision makers and completed an external review of the NERRS Coastal Training Program, including a plan to strengthen the program’s effectiveness in delivering science to managers; approved updated management plans for four Reserves, as required by the CZMA; and completed site profiles (a complete characterization) for two Reserves.

CZM AND STEWARDSHIP/ CZMA NATIONAL PROGRAM - The programs described above, CZM Grants and NERRS, as well as the NERRS Acquisition and Construction grants (under Procurement, Acquisition and Construction), are implemented with the resources provided in the budget for the CZMA National Program. OCRM staff carry out numerous critical functions necessary to execute these programs, in addition to negotiating, processing, and providing oversight for more than 100 grants and cooperative funding agreements each year. These functions include:

- Providing management assistance to states in the development, implementation, and improvement of state CZM programs and estuarine research reserve management plans, which are assessed or updated every five years to reflect changing circumstances;
- Analyzing national issues and trends in coastal resource management and measuring the results of the CZMA programs;
- Conducting periodic programmatic evaluations of each state CZM program and NERR;
- Reviewing Federal agency actions for compliance with the Federal consistency provisions of Section 307 of the CZMA and providing mediation services when necessary;
- Conducting training, outreach, and education activities concerning coastal issues;
- Providing technical leadership, coordination, and management of NERRS system-wide education, training, research, monitoring, and technology development programs;
- Providing policy guidance and assistance to states on interpretation of CZMA requirements, as well as those of other Federal statutes and programs, and
- Administering outstanding loans and repayments to the Coastal Zone Management Fund from the Coastal Energy Impact Assistance Program.

MARINE PROTECTED AREAS (MPA) PROGRAM (<http://mpa.gov/>) NOAA’s MPA Program, in coordination with the Department of the Interior, fills a long-standing need for objective science, policy, and management tools to advance the effective use of MPAs in meeting diverse conservation and management objectives. The MPA Program is guided by the Framework for the National System of MPAs. Funding for the program supports core staff to provide MPA science, analysis, outreach, training, technical assistance and coordination. The MPA Center’s primary goal is to work with MPA programs, managers and stakeholders to develop a comprehensive and integrated national system of MPAs that more effectively conserves and protects significant areas of our natural and cultural marine heritage. Moreover, the Center facilitates coordination among the various Federal, state and tribal MPA programs to improve the effectiveness of existing MPAs and accomplish conservation goals that could not otherwise be achieved. The MPA Center is headquartered in Silver Spring, Maryland, with scientific support in Monterey, California. A diverse MPA Federal Advisory Committee—including representatives of industry, user groups, scientists, and others— provides advice on the establishment and management of the national system.

Schedule & Milestones:

- Review Final Management Plan and Environmental Impact Statement for the Illinois Coastal Management Program (by Q4, FY 2012)
- Complete revision of 27 NERR management plans by FY 2016
- Complete 100 percent of National Estuarine Research Reserve site profiles by FY 2016
- Work with states/territories toward approval of non-point pollution control programs
- Continue to build and strengthen the National System of MPAs by adding new sites and providing assistance to member programs (FY 2012-2016)

Deliverables:

- Final Management Plan and approval for Illinois Coastal Management Program
- Final Management Plan and designation for Lake Superior NERR in Wisconsin
- Average of 250 sites that provide public access to the coast, added or improved per year through the CZM program
- More than 400 training activities conducted annually for coastal decision makers through the NERRS Coastal Training Program, reaching 7,400 participants for over 60,000 contact hours
- First phase of Ocean Thermal Energy Conversion (OTEC) commercial licensing process completed (FY 2012)
- All U.S. ecoregions represented in the National System of MPAs
- 54 NERRS Graduate Research Fellows conducting research annually on pressing coastal management issues
- Four Federal Consistency trainings and regional workshops held for states, Federal agencies and interest groups to improve understanding and reduce the likelihood of consistency appeals to the Secretary of Commerce

Performance Goals and Measurement Data

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Annual number of new or improved public access sites through CZMP	Target	Target	Target	Target	Target	Target
	250	250	250	250	250	250
Description: This measure tracks the number of new or improved sites for public access to coastal areas that have resulted from the Coastal Zone Management Program						

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Percentage of NERR System adequately characterized for management	Target	Target	Target	Target	Target	Target
	86%	89%	93%	96%	100%	100%
Description: This tracks NOAA's progress in characterizing each National Estuarine Research Reserve's resources and condition to guide effective long-term management. Reserves are characterized through site profiles, which summarize the existing state of knowledge about reserve research and monitoring activities and identify research needs that should be addressed in the future. It is measured as the percent of designated Reserves that have completed a site profile.						

Performance Measure:	FY	FY	FY	FY	FY	FY
Percentage NERRS Coastal Training Program (CTP) participants intending to apply lessons learned	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	79%	79%	79%	79%	79%	79%
Description: A primary goal of the National Estuarine Research Reserve program is to improve coastal decision making by generating and transferring knowledge about coastal ecosystems and priority coastal management issues. This measure tracks the relevance of the information to coastal decision-makers as well as the effectiveness of training programs to transfer knowledge to managers that can be applied to coastal management decisions.						

OCEAN MANAGEMENT

The National Marine Sanctuaries Act (NMSA) authorizes the Secretary of Commerce to designate areas of the marine environment of special conservation, recreational, ecological, historical, research, educational, or aesthetic value as national marine sanctuaries and to provide comprehensive management of these areas with the primary objective of resource protection. The NMSA provides NOAA with direct Federal management authority in designated ocean and coastal areas. The Act requires an extensive public process to identify and develop solutions regarding planning, implementation, and evaluation of marine areas, uses, and protections. With the increasing environmental pressures on our Nation's coastal areas, the importance of maintaining a system of marine protected areas is evident. Sanctuaries contain natural resource assets of extraordinary social and economic value. Investments that contribute to the long term health of these natural resources ensure that they can continue to be sustainably and responsibly utilized.

In the Ocean Management Line Item, NOAA administers the National Marine Sanctuary System (NMSS) under authority of the NMSA. The system includes 13 designated national marine sanctuaries, as well as the Papahānaumokuākea Marine National Monument (established by the President on June 15, 2006 as the NWHI Marine National Monument and recently designated as a world heritage site), which is one of the largest marine protected areas in the world (stretching 1,200 miles, about the distance from Chicago to Miami). In addition, in 2009 NOAA was directed to consider incorporating the Rose Atoll Marine National Monument into the Fagatele Bay NMS. The 13 designated sanctuaries include: Monitor (NC), Channel Islands (CA), Gray's Reef (GA), Gulf of the Farallones (CA), Fagatele Bay (AS), Cordell Bank (CA), Florida Keys (FL), Flower Garden Banks (TX/LA), Gerry Studds Stellwagen Bank (MA), Monterey Bay (CA), Olympic Coast (WA), Thunder Bay Underwater Preserve (MI) and Hawaiian Islands Humpback Whale (HI). The sanctuaries range in size from one-quarter square mile in Fagatele Bay to over 5,300 square miles in Monterey Bay. Together, these sanctuaries encompass over 18,000 square miles of waters and marine habitats. The monuments and sanctuaries protect special habitats, including deep ocean and near-shore coral reefs, live bottom, whale migration corridors, deep sea canyons, areas of deep water upwelling, submerged banks that rise close to the ocean surface, kelp forests, sea grass beds, and special maritime heritage assets. With the increasing environmental pressures on our Nation's coastal areas, the importance of maintaining a system of marine protected areas is evident. The NMSS is increasing our knowledge and understanding of complex marine ecosystems. By monitoring human and natural changes in these sentinel sites, NOAA's marine sanctuaries and marine monuments help preserve the Nation's marine environments.

NATIONAL MARINE SANCTUARY SYSTEM (NMSS) (<http://sanctuaries.noaa.gov/>)

The ONMS manages and operates the Nation's system of marine sanctuaries and the Papahānaumokuākea Marine National Monument. Individual sanctuary and monument offices are responsible for the daily operation of a wide variety of education, research, monitoring and

management programs. Through extensive public engagement processes, each site undertakes activities including: development, implementation, and systematic review of comprehensive management plans to protect these unique areas; development and implementation of local research and monitoring programs to better understand the resources and potential impacts on those resources; development and implementation of cultural resource programs to survey and inventory resources to ensure their long-term protection; development and implementation of education and outreach activities to inform the public about the value of marine resources and how human activities impact the marine environment; coordinating through partnerships to ensure enforcement of sanctuary regulations; permitting of otherwise prohibited activities to allow valuable research and education activities; management of volunteer programs that monitor and educate on marine resources; and management of citizen advisory councils to ensure that each sanctuary is responsive to community needs. In addition, each site is engaged in a number of partnership relationships with other Federal agencies, state agencies, local universities, and other local institutions.

Regional offices work to capitalize on potential opportunities and partnerships and coordinate with other Federal agencies, many of which operate at a regional level. The regions help to more efficiently coordinate various programs and assets among the sites, regions, and headquarters. The regions also provide an improved basis for program integration with NOAA's evolving ecosystem approach to management and NOAA regional teams for national priorities pertaining to climate change, coastal and marine spatial planning, and regional collaboration.

Programmatic oversight, guidance, and support from the headquarters office ensure that the sites function as a coordinated system. Headquarters functions include the development of programmatic initiatives, such as system-wide research, monitoring, cultural resource, education, and outreach programs; policy development; budget development and tracking; legislative and regulatory initiatives; review and revisions of management plans; development and designation of new sites; and overall guidance and program direction. These functions ensure that the NMSS is an integrated system that has greater national impact than the sum of the individual site actions.

Schedule & Milestones:

- Complete development of revised management plans for five sanctuaries through community-based processes – Monitor (FY 2012), Olympic Coast (FY 2012), Fagatele Bay (FY 2012), Flower Garden Banks (FY 2012) and HI/Humpback Whale (FY 2013)
- Develop and begin implementing consistent, long-term monitoring directed at understanding climate change. Develop concept of sanctuaries as sentinel sites for climate change, including monitoring parameters and spatial/temporal scales (FY2012), prototype application at one sanctuary (FY 2013), application at additional sites and/or additional monitoring parameters (FY 2013-2016), data management (FY 2013-2016).

Deliverables:

- Develop and/or expand education and public outreach, including those with multi-cultural communities, related to ecosystems, climate change and human use impacts
- Develop and/or expand partnerships with local communities and businesses to implement sustainable practices for fishing, ecosystem protection and alternative energy technologies
- Habitat restoration and marine debris removal at all sanctuaries Monitoring programs, scientific assessments, technologies, public awareness and mitigation strategies associated with climate change at all sanctuaries
- Maintain marine acoustics programs to determine the distribution of marine mammals and vessel traffic patterns at Stellwagen Bank and Channel Islands sanctuaries

- Develop education initiatives at all sites that protect marine mammals from vessel strikes and conduct disentanglement and rescue operations
- Implement and enforce new education, survey and eradication programs to avoid and mitigate introduction of invasive species in multiple sanctuaries

Performance Goals and Measurement Data

Performance Measure:	FY	FY	FY	FY	FY	FY
Number of NMS Sites that maintain or improve water quality, habitat and living marine resources	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	10	10	10	10	12	12
<p>Description: This measure assesses the status of water quality, habitat, and/or living marine resources based on indicators of biodiversity, key species, extracted species, invasive species, health and human impacts. The NMSP and independent evaluators (universities, research institutions SAC research subcommittees, and environmental consultants) evaluate data to determine whether the condition is improving, remaining stable (maintaining), or deteriorating. These outcome-based measures are derived from the National Marine Sanctuaries Act and provide direct and quantifiable evidence to demonstrate Program effectiveness. For each sanctuary, a "condition report" integrates the best available science and scientific interpretation to quantify the status and trends of WQ, habitat and living resource conditions. During the past five years, ONMS has undergone two additional formal external reviews (NAPA and DOC OIG) that have documented successful application and progress toward these performance measures.</p>						

PROPOSED LEGISLATION:

The Administration will work with Congress to reauthorize the Coastal Zone Management Act and the National Marine Sanctuaries Act.

PROGRAM CHANGES FOR FY 2012:

Coastal Zone Management Grants: State Information System Modernization (Base Funding: 0 FTE and \$68,146,000; Program Change: -0 FTE and -\$2,000,000): NOAA requests a decrease of \$2,000,000 and 0 FTE for a total of \$66,166,000 and 0 FTE. In the Consolidated Appropriations Act, 2010, Congress provided an additional \$2 million for the Coastal Zone Management grant program for activities including the establishment of a competitive grant program targeted at modernizing and improving State information systems. In FY 2010, NOAA used \$1 million of this additional funding to award grants to California, the Commonwealth of the Northern Marianas Islands, Georgia, Maine, Massachusetts and Ohio. These grants were provided as one-time funds to support state efforts to modernize and improve information systems to support coastal decision making pertaining to permitting and land use. The remaining \$1 million was used to supplement base funding to support other important coastal issues including climate change and ocean planning. These additional funds are not required in FY 2012, as the President's FY 2012 Request includes sufficient funding for the National CZM grants program to provide for financial assistance, national policy guidance, technical assistance, and other support necessary to implement 34 coastal management programs in partnership with states and territories. In addition, the President's FY 2012 Request includes \$6,770,000 to develop an agency-wide capability to conduct and support comprehensive coastal and marine spatial planning (CMSP) in U.S. waters. The requested increase will include regional data integration and planning support (\$3,411,000) and building national capacity through data integration, tools and monitoring (\$3,359,000).

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Subactivity: Ocean and Coastal Management

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(2,000)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>(2,000)</u>

Regional Ocean Partnerships (Base Funding: 0 FTE and \$0; Program Change: +1 FTE and +\$20,000,000): NOAA requests an increase of 1 FTE and \$20,000,000 for a total of \$20,000,000 and 1 FTE to initiate a targeted competitive grant program to advance regional ocean management through support for regional ocean partnerships including coastal and marine spatial planning.

Proposed Actions:

With the requested increase, NOAA will establish a competitive grants program to advance effective ocean management through regional ocean governance. To this end, the program will help support priority actions identified in the plans of existing regional ocean partnerships (e.g., Gulf of Mexico Alliance, Northeast Regional Ocean Council, Great Lakes Regional Collaboration, and the West Coast Governors' Agreement on Ocean Health), as well as supporting the development and implementation of ocean management plans in other regions (e.g. the Mid-Atlantic Regional Council on the Ocean, the South Atlantic Alliance, Hawaii, and other regions) and addressing regional activities in other parts of the country (e.g. the Pacific and Caribbean territories, and Alaska). Support for these partnerships will include the development of comprehensive coastal and marine spatial plans that are consistent with the U.S. National Framework for Coastal and Marine Spatial Planning (CMSP). Eligible grant recipients will include state, local and tribal governments, institutions of higher learning, and non-profit organizations working with these regional ocean partnerships or member states. Through public processes, regional ocean partnerships have identified priority needs and actions to address critical issues such as: coastal water quality, nutrient loading and clean beaches; wetland and habitat restoration, protection and characterization; environmental education and literacy; coastal community resilience and sustainability (including working waterfronts); sustainable offshore renewable energy; ecosystem based management; coastal scientific information, research, and monitoring; addressing impacts from climate change; and aquatic invasive species. Each year, NOAA will work with the regional ocean partnerships to identify priority areas to focus the funding opportunity. Because CMSP is an important component of regional ocean governance efforts, and is key to the success of many of the priority actions, funding will emphasize the development and implementation of CMSPs consistent with the national goals, principles, and criteria established by the National Ocean Policy. The funds would ensure, through NOAA policy leadership and technical support, that states, territories, and regional ocean partnerships develop objective, consistent and transparent CMSP processes based on sound science and meaningful stakeholder input. In implementing this program, NOAA will coordinate with other Federal agencies involved in regional ocean governance and CMSP efforts, and will consider geographic diversity.

The request also supports NOAA's implementation of this program, including coordination, planning, and implementation with the states, other Federal agencies, and other partners within the regional ocean partnership framework with the provision of necessary support (e.g. science, policies, information, tools and training) to further regional priorities. This grant program will be closely coordinated with other NOAA programs, and the activities supported through the coastal and marine spatial planning increase also requested in FY 2012.

Statement of Need and Economic Benefits:

The Nation's coastal communities and economies depend on healthy coastal resources, which are threatened by fragmented planning and management of societal use of coastal lands and waters. Coastal communities face risks from resource depletion and degradation, associated negative human health impacts, and use of high-hazard areas. Increased demands for offshore energy, aquaculture, and marine transportation, coupled with increased interest in area-based conservation, add to the need to manage expanding and often competing uses of these finite coastal and ocean areas. Climate change is expected to amplify these challenges.

The National Ocean Policy, the Pew Oceans Commission, the U.S. Commission on Ocean Policy, and the Joint Ocean Commission Initiative all call for regional ocean governance mechanisms to address the growing crises facing our oceans. The value of regional approaches to coastal and ocean governance and comprehensive planning is reflected in the rapid engagement by most coastal states in new regional ocean governance partnerships. Regional ocean governance mechanisms facilitate the effective management of ocean and coastal resources across jurisdictional boundaries by improving communications, aligning priorities, and enhancing resource sharing between local, state, and Federal agencies. The benefits of a regional, ecosystem-based collaborative approach are numerous and will result in more efficient and effective governance.

Federal-state partnerships are central to effective regional ocean governance and NOAA's involvement in this governance is critical to overcome the independent and fragmented management regimes that currently exist. Failure to do so, in the face of growing and competing demands on ocean space and resources, will have profound impacts on all ocean users and constituencies. The Federal agencies bring diverse expertise and established experience; coordinating and integrating these capabilities will maximize the impact of Federal resources.

The convergence of increasing population, natural resource use and loss, and increasing coastal hazards will affect the daily lives of Americans as they use products shipped into U.S. ports, consume seafood, and vacation along the coasts. Coastal health and community resilience also can affect the U.S. economy in terms of disaster losses, public health issues, and impacts on local economies. Many of these issues are best dealt with from a regional perspective, with regional alliances of states providing the context for priorities and implementing mechanisms.

The socioeconomic need for a regional, ecosystem-based, collaborative approach is compelling, and is strongly linked to NOAA's mission goals. Regional ocean governance supports the management of resources that contribute about \$230 billion each year to the national economy in market-based outputs and ecological systems that increase property values and the quality of life in coastal areas (NOEP, 2004. *Ocean-Related GDP with Multipliers, All Ocean Sectors*). This request represents a relatively small investment to preserve such a significant economic contribution. Moreover, supporting regional initiatives to develop science-based, comprehensive coastal and marine spatial plans will yield many tangible benefits, such as: reduced user conflicts, streamlined permitting, synergies among compatible uses, incentives for developing coastal infrastructure and business relevant to planned offshore uses, and more sustainable ecosystems; and the social, cultural and economic services they provide to coastal communities.

Base Resources Assessment:

NOAA does not currently have base resources for this activity in the Ocean and Coastal Management program (Regional Ocean Partnerships is a new initiative).

Schedules and Milestones:

FY 2012

- Issue FFO and complete ROP competitive funding process
- Hold workshop(s) with ROPs to share ideas and progress on achieving priorities; and to identify opportunities for collaboration

FY 2012+

- Assist ROPs with improving data management and decision support tools to support Regional Ocean Partnership priorities and build CMSP capacity

- Develop performance measurement system to support National Ocean Policy and ROP implementation

Deliverables:

FY2012

- Enter into up to ten cooperative agreement awards to support Regional Ocean Partnership coordination and development
- Enter into up to five cooperative agreement awards to implement Regional Ocean Partnership priorities supportive of the National Ocean Policy

FY2012+

- At least five to ten regions have improved capacity for coordination and communication
- At least three regions have improved data management and decision support tools to support Regional Ocean Partnership priorities and build CMSP capacity

FY 2013+

- Initiation of a performance measurement system at the regional and national levels for National Ocean Policy priorities including CMSP

Performance Goals and Measurement Data

Performance Measure:	FY	FY	FY	FY	FY	FY
Implement priority activities identified in regional action plans (cumulative).	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Increase	N/A	24	44	64	82	97
Without Increase	12	14	14	16	16	16

Description: Regional ocean partnerships will make progress in achieving the actions within integrated plans that have clearly identified goals and objectives for long term ocean health and sustainability and engage academic, non-governmental organizations and private interests. These efforts will build upon the existing accomplishments of the regional ocean partnerships including the Gulf of Mexico Alliance (without increase targets are based on activities implemented using funds appropriated in FY 2008 – FY 2011 for Gulf of Mexico Alliance activities). In addition, the program will adopt one or more of the outcome-based measures that will be developed pursuant to the regional CMSP plans. Per the Ocean Policy Task Force, possible measures of conservation may include, but are not limited to, indicators of ecosystem health such as the status of native species diversity and abundance, habitat diversity and connectivity, and key species (i.e., species known to drive the structure and function of ecosystems). In addition, socio-economic measures may include but are not limited to: the economic value or productivity of certain economic sectors, such as commercial and recreational fisheries, aquaculture, and offshore energy; the number of recreation days; and the time required for permit applications to complete the regulatory process.

PROGRAM CHANGE PERSONNEL DETAIL

Activity: National Ocean Service
 Subactivity: Ocean and Coastal Management

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Program Analyst	Silver Spring, MD	ZA-04	<u>1</u>	89,033	<u>89,033</u>
Total			<u>1</u>		<u>89,033</u>
less Lapse		0%	<u>0</u>		<u>0</u>
Total full-time permanent (FTE)			1		89,033
2011 Pay Adjustment (0%)					0
2012 Pay Adjustment (0%)					<u>0</u>
TOTAL					89,033

Personnel Data	Number
Full-Time Equivalent Employment	
Full-time permanent	1
Other than full-time permanent	<u>0</u>
Total	1
Authorized Positions:	
Full-time permanent	1
Other than full-time permanent	<u>0</u>
Total	1

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Subactivity: Ocean and Coastal Management

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	89
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	89
12 Civilian personnel benefits	26
13 Benefits for former personnel	0
21 Travel and transportation of persons	90
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	15
25.1 Advisory and assistance services	0
25.2 Other services	750
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	10
31 Equipment	20
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	19,000
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	20,000

Working Waterfronts Grant Program (Base Funding: 0 FTE and \$0; Program Change: +0 FTE and +\$8,000,000): NOAA requests an increase of \$8,000,000 and 0 FTE for a total of \$8,000,000 and 0 FTE to create a Working Waterfronts grant program.

Proposed Actions:

NOAA proposes to create an \$8,000,000 National Working Waterfronts grant program for FY 2012 to assist fishing-dependent coastal communities adversely affected by changes in the fishing industry on which they depend. Numerous communities that traditionally relied on robust fishing fleets are finding it necessary to transition their economies and workforces in order to support more economically and biologically sustainable conditions. This program will assist distressed fishing communities and displaced fishermen by providing resources for communities to engage in planning, capacity building, and other activities to support economic diversity, resource conservation, and human and economic capital growth. The program will benefit a broad variety of coastal communities impacted by fishery management programs necessary to end overfishing and rebuild fish stocks, as well as environmental conditions that are changing the distribution and abundance of marine fisheries.

Specifically, NOAA requests to use the funds for competitive external funding opportunities to support demonstrably affected fishing-dependent coastal communities as follows:

- **Socio-economic Studies (\$1M):** To undertake socio-economic studies that will improve the understanding of stakeholder needs and support economic transition in fishing communities. Research grants are anticipated to be available in the range of \$100,000 to \$250,000 each.
- **Community-based Planning/Capacity Building (\$1.5M):** To develop community-based economic strategies, develop and undertake planning and stakeholder processes, and build capacity at the local level. Grants are expected to be available in the amount of \$100,000 to \$250,000 each.
- **Economic Development and Transition Implementation Projects (\$5M):** To implement community-based projects that support development and transition to a more diversified local economy. Grants are estimated to be available from \$500,000 to \$1,000,000 each.
- **Management support (\$0.5M):** To develop the grants program, run the competitive review process, administer awards, and provide annual updates on the program.

As envisioned, the program will have the flexibility to fund research, planning, capacity building and “on-the-ground” implementation projects depending upon the demonstrated local and state need, and will complement Federal programs that provide direct assistance to fishermen and effectively contribute to improving the sustainability of fisheries. The specific projects funded will be unique to each community, based on the maturity of the communities’ planning processes and capabilities, the demographics of the community, and their ability to meet the criteria outlined in the Federal Funding Opportunity (FFO).

This grant program will be implemented as a NOAA partnership between NOS, NMFS, and OAR (Sea Grant), with the assistance of the Department of Commerce’s (DOC) Economic Development Administration (EDA). DOC will work with other agencies such as the Department of Labor and the Department of Health and Human Services in order to help leverage interagency programs to help increase the economic vitality and adaptive capacity of coastal fishing communities. The program will be competitive, narrowly focused on defined fishery-dependent communities, and flexible to encourage innovative ideas and approaches to help coastal communities to protect traditional water-dependent uses, while diversifying their economies and growing jobs. Diversification of local economies can provide fishermen and

associated industries with a broader array of job opportunities that are water-related. Numerous communities have taken advantage of planning processes to reprioritize coastal uses, expand their economic base, and create a “road map” for future economic growth. This program will further these efforts.

Statement of Need and Economic Benefits:

Coastal counties cover only 17 percent of the nation’s land area, however they support over 50 percent of the U.S. population and generate nearly 60 percent of the U.S. gross domestic product from activities including commercial and sport fishing, maritime transportation, recreation, and tourism. The gross domestic product in coastal states was valued at \$11.4 trillion in 2007. The nation’s coasts directly support the ecological, economic, and cultural well-being of the United States. The health and productivity of coastal communities, in turn, depend upon the ecosystems in which they are located and which generate benefits such as sustainable fisheries, storm protection, and healthy beaches. In particular, the economic base of many coastal communities has depended on an active fishing industry. For example, commercial and recreational fisheries result in \$162.9 billion in sales impacts in the U.S. economy each year.¹ However, a number of U.S. fisheries are under-performing biologically and economically. The present productivity of U.S. fishery resources is 24 percent below the long term sustainable yield of 12.4 million tons.² Fishing communities will benefit from a more robust and sustainable waterfront economy.

NOAA has the expertise, capabilities, and authorities to effectively administer a Working Waterfronts grant program. Authorities include:

- Coastal Zone Management Act (CZMA) (16 U.S.C. §§ 1451-1466) - provides the basis for protecting, restoring, and responsibly developing the nation’s diverse coastal communities and resources. The CZMA takes a comprehensive approach to coastal resource management—balancing the often competing and occasionally conflicting demands of coastal resource use, economic development, and conservation. The CZMA specifically identifies economic development, giving consideration to issues such as coastal-dependent uses, redevelopment of deteriorating urban waterfronts and ports, public access, fisheries development and aquaculture, and restoration of historic, cultural, and aesthetic coastal features.
- Sea Grant Act (33 USCS §§1121-1131) - establishes a program to provide for the understanding and wise use of ocean, coastal, and Great Lakes resources and the environment; foster economic competitiveness; and promote public stewardship and wise economic development of the coastal ocean and its margins, the Great Lakes, and the exclusive economic zone.

Base Resources Assessment:

NOAA does not currently have base resources for this activity in the Ocean and Coastal Management program (the Working Waterfronts program is a new initiative for FY 2012). Although the Agency does not currently have base resources for this activity, NOAA has considerable experience and capability in working with coastal communities on working waterfront issues.

¹ NMFS, 2010. Fisheries Economics of the U.S., 2008. NOAA Tech Memo NMFS-F/SPO-109, 177 p.

² NMFS, 2009 Our living oceans: Report on the status of U.S. living marine resources, 6th edition. NOAA Tech Memo NMFS-F/SPO-80, 369 p.

Schedule and Milestones:

- Develop and publish an annual Federal Funding Opportunity (FFO) for a competitive grants program, including program objectives, funding criteria, and the selection process (FY 2012 – FY 2016, 1st Quarter)
- Review, rank, and select applications for funding (FY 2012–2016, 2nd Quarter)
- Fund selected projects (FY 2012– 2016, 4th Quarter)
- Annual summaries of Working Waterfront Grant Program accomplishments (FY 2013 – 2016)

Deliverables:

- Socio-economic information to support economic development in fishing communities (FY 2013 – 2016)
- Community-based economic development strategies (FY 2013 – 2016)
- Implementation projects supporting the transition and sustainability of local economies (FY 2012 – 2016)
- Sustained partnerships with economic development partners at Federal and state levels

Performance Goals and Measurement Data

Performance Measure: Number of socio-economic studies developed supporting economic development in fishing communities (cumulative)	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	NA	0	4	8	12	16
Without Increase	0	0	0	0	0	0
Description: Socio-economic studies provide the basis for understanding stakeholder needs and the impacts to local and regional economies that result from changes in fishery management strategies and other environmental conditions. These studies provide the foundation for planning, strategies and capacity building related to economic development.						

Performance Measure: Number of economic development strategies, planning processes and capacity building activities implemented at the local level. (cumulative)	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	NA	0	6	12	18	24
Without Increase	0	0	0	0	0	0
Description: Economic development strategies, planning processes and capacity building activities tailored to local needs provide a vision and “road map” for economic transition in fishing communities.						

Performance Measure: Number of projects funded to support economic development and transition in fishing communities (cumulative)	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	NA	5	10	15	20	25
Without Increase	0	0	0	0	0	0
Description: Community-based implementation projects to support development and transition to a more sustainable local economy.						

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Subactivity: Ocean and Coastal Management

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	50
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	450
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	7,500
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	8,000

National Estuarine Research Reserves (NERRS) (Base Funding: 0 FTE and \$23,500,000; Program Change: -0 FTE and -\$1,174,000): NOAA requests a decrease of \$1,174,000 and 0 FTE for a total of \$22,326,000 and 0 FTE for National Estuarine Research Reserves (NERRS) operational funding. The Consolidated Appropriations Act, 2010, provided additional funding for NERRS operations to implement the approved management plans of 27 reserves. This additional funding is no longer required as the FY 2012 President's Budget provides for sufficient funding to support essential operations at NERRS reserves throughout the Nation. The NERRS allocates funding for site-specific programs as well as system-wide programs that achieve the program's objectives to protect estuarine areas (more than 1.3 million acres), provide educational opportunities, promote and conduct estuarine research and monitoring, and transfer relevant information to coastal managers. The program is focusing on four priority topics: impacts of land use and population growth; habitat loss and alteration; water quality degradation; and changes in biological communities. Base funds for NERRS support science, education and stewardship programs, reserves operations, and the NERRS Science Collaborative.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Subactivity: Ocean and Coastal Management

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(1,174)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(1,174)

Marine Protected Areas (Base Funding: 0 FTE and \$3,000,000; Program Change: -0 FTE and -\$872,000): NOAA requests a decrease of \$872,000 and 0 FTE for a total of \$2,128,000 for the Marine Protected Areas (MPA) program. The Consolidation Appropriations Act, 2010, provided additional funding for the MPA program to help support the MPA priorities identified for FY 2010 action including: strengthening marine conservation through the national system partnership; planning for the future of the national system partnership; and engaging stakeholders and the public in support of the national system and marine conservation. This additional funding is no longer required as the President's FY 2012 Request provides sufficient funding to support MPA science, analysis, outreach, training, technical assistance and coordination. NOAA's MPA Program, in coordination with the Department of the Interior, fills a long-standing need for objective science, policy, and management tools to advance the effective use of MPAs in meeting diverse conservation and management objectives. The MPA Program is guided by the Framework for the National System of MPAs.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Subactivity: Ocean and Coastal Management

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(872)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(872)

Energy Licensing and Appeals (Base Funding: 4 FTE and \$1,900,000; Program Change: -0 FTE and -\$1,200,000): NOAA requests a decrease of \$1,200,000 and 0 FTE for a total of \$700,000 and 4 FTE.

Proposed Actions:

NOAA requests a decrease of \$1,200,000 and 0 FTE for Energy Licensing and Appeals. The requested resources are sufficient for NOAA to meet its responsibilities under the Federal Consistency provisions of the Coastal Zone Management Act (CZMA). The requested resources will also be used for NOAA's permitting responsibilities under the Ocean Thermal Energy Conversion Act (OTECA). Resources will allow NOAA to augment policy, management, and legal capabilities and to support critically needed technical and scientific expertise. Specifically, NOAA will provide technical and management support to states, industry, and other stakeholders on siting and Federal Consistency issues relating to offshore energy development. NOAA will also coordinate with other federal agencies that have responsibilities for offshore energy and support the initiation of a commercial permitting process for Ocean Thermal Energy Conversion (OTEC) facilities.

Statement of Need and Economic Benefits:

Developing a successful offshore energy sector is important to the U.S for energy security, military readiness, and global competitiveness. Renewable coastal and ocean energy efforts are growing exponentially -- to exploit the enormous power available from wind, tides, currents, and thermal differences, as well as to avoid the issues associated with terrestrial energy development. However, energy projects have the potential for significant biological, physical, and socio-economic impacts. Information to determine these impacts, especially for those employing new or emerging technologies, is critically needed.

NOAA is a key agency in the ocean energy arena through several legislative mandates, including ocean planning and Federal Consistency under the CZMA, and direct permitting responsibilities for commercial OTEC facilities under OTECA. Federal agencies, states, and industry need NOAA to help them plan commercially-feasible ocean energy projects, and are increasingly requesting NOAA's direct involvement.

Approximately two-thirds of U.S. coastal and Great Lake states and territories are seriously considering offshore energy development options. In 2010, eleven states and the Federal government announced plans to form a consortium to coordinate and expedite the creation of an offshore wind industry in the Atlantic Ocean. In particular, it was noted that proactive planning is needed to make the federal permitting process more streamlined and predictable, to avoid conflict, and to prevent the loss of the most suitable and feasible locations. States will use CZMA funds and authorities in many of these offshore wind development efforts; this will require NOAA oversight, particularly in site planning and development of state policies. Furthermore, the Department of Energy (DOE) is receiving proposals for OTEC demonstration projects at a commercial scale. In order to make the demonstration projects compatible with commercial licensing requirements, NOAA needs to have protocols incorporated into the DOE demonstration certification criteria. The U.S. Navy is currently investing in OTEC technology development, while industry is investing in the construction of a pilot facility in 2013 (with plans to develop a full-scale commercial plant in the following years). Regulatory certainty is critical to OTEC (due to the high costs of development and associated investment risks). Final OTEC programmatic rulemaking will require the establishment of baseline information, monitoring and modeling criteria that OTEC developers need to collect in order to assess environmental impacts of the facilities, and preparation of an environmental impact statement. NOAA will work with partners on strategies for supporting these efforts.

Base Resource Assessment:

The base resources for this activity are described in the Ocean and Coastal Management base narrative.

Schedule and Milestones:

- Develop a proposed programmatic rule for reviewing OTECA license applications (FY 2011 - 2012)
- Initiate efforts to establish baseline information, monitoring and modeling criteria that OTEC developers need to collect in order to assess environmental impacts of OTEC facilities (FY 2012-2016)

Deliverables:

- Proposed OTEC rule for commercial OTEC license permits (FY 2013)

Performance Goals and Measurement Data

Performance Measure: Average	FY	FY	FY	FY	FY	FY
number of days required to review and approve or deny proposed changes to state enforceable policies.	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Decrease	100	100	100	90	90	90
Without Decrease	75	75	60	60	60	60
Description: Before new or amended enforceable policies, such as laws and regulations, of a coastal state or territory can be used for Federal Consistency, it must be submitted to NOAA for review and approval. This measure tracks NOAA’s efforts to reduce the time needed to review and reach a decision on proposed changes to state enforceable policies.						

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Subactivity: Ocean and Coastal Management

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(1,200)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(1,200)

Marine Sanctuary Program (Base Funding: 182 FTE and \$50,087,000; Program Change: -0 FTE and -\$4,051,000): NOAA requests a decrease of \$4,051,000 and 0 FTE for a total of \$46,036,000 and 0 FTE for the Marine Sanctuary Program. In the Consolidated Appropriations Act, 2010, Congress provided \$4,051,000 in additional funding for the Marine Sanctuary Program to operate the national program and implement and review management plans across the system of national marine sanctuaries. This additional funding is no longer required as the President's FY 2012 Request includes sufficient funds for the National Marine Sanctuaries Program (NMSP) to provide support for essential operations for the Nation's system of 13 marine sanctuaries and the Papahānaumokuākea Marine National monument.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Subactivity: Ocean and Coastal Management

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(4,051)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(4,051)

Congressionally Directed Projects (Base Funding: 0 FTE and \$15,620,000; Program Change: - 0 FTE and -\$15,620,000): NOAA requests a decrease of \$15,620,000 to terminate the funding level that would continue under an annualized FY 2011 continuing resolution associated with the Congressionally directed projects identified in the Conference Report that accompanied the Consolidated Appropriations Act, 2010.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Account: Operations, Research and Facilities

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	(6)
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	(6)
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(2,705)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	(56)
31 Equipment	(97)
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(12,750)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(15,620)</u>

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APPROPRIATION: PROCUREMENT ACQUISITION AND CONSTRUCTION
SUBACTIVITY: PROCUREMENT ACQUISITION AND CONSTRUCTION

The NOS Procurement, Acquisition, & Construction subactivity includes three line items.

Coastal and Estuarine Land Conservation Program

(<http://coastalmanagement.noaa.gov/land/welcome.html>)

The Coastal and Estuarine Land Conservation Program (CELCP) provides grants to state and local governments to protect important coastal and estuarine areas that have significant conservation, recreation, ecological, historical or aesthetic values, or are threatened by conversion from their natural or recreational state. The Federal grants require matching funds, which leverage additional state, local or private contributions. NOAA has developed and issued guidelines delineating criteria for grant awards and a process for conducting a national competitive grants program under the CELCP. Through this program, NOAA supports efforts to protect important stream corridors and habitats, reduce the flow of polluted runoff into coastal waters, lessen the impacts of coastal flooding from severe storm events, and provide opportunities for coastal recreation and nature-based tourism. This program is authorized by the Coastal and Estuarine Land Conservation Act of 2009, which requires that 15 percent of funds be allocated to projects that benefit a National Estuarine Research Reserve (NERR). These funds supplement those in the NERRS construction/acquisition line by supporting land acquisition in the watershed of the reserve.

The Outyear Funding Estimates are provided with the program change requested for this activity.

National Estuarine Research Reserve System Construction/Acquisition

(<http://www.nerrs.noaa.gov/>)

The National Estuarine Research Reserve System (NERRS) is a Federal-state partnership established under the CZMA designed to protect and understand valuable estuarine resources through research and education. For PAC, NERRS funding is matched 70:30 (Federal: State) for facilities construction and 1:1 for land acquisition. Reserves are publicly owned lands and onsite facilities that provide opportunities for researchers as well as the public to better understand these estuarine areas. Supplementing or updating facilities at the 28 reserves will be carried on in conjunction with the development of system-wide construction plans. All construction activities are carried out based on current needs for implementing core NERRS programs and external opportunities for partnerships. When available, reserves will acquire additional nearby critical habitat within, or adjacent to a reserve boundary as identified in reserve management plans to increase protection and provide places for conducting long-term science, education, and demonstration programs. The facilities and land of the reserves are owned and managed by the states in this Federal-state partnership. NERRS construction and land acquisition projects are selected on a competitive basis.

The Outyear Funding Estimates are provided with the program change requested for this activity.

National Marine Sanctuary Program Construction/Acquisition (<http://sanctuaries.noaa.gov/>)

NOAA administers the National Marine Sanctuary System under authority of the National Marine Sanctuaries Act. The Office of National Marine Sanctuaries manages and operates the Nation's system of 13 Marine Sanctuaries and the Papahānaumokuākea Marine National Monument. The program is implementing a comprehensive facilities plan that prioritizes needs and opportunities at individual sites for constructing exhibits, collaborative education and visibility projects, and operational needs. In order to establish better understanding and appreciation for sanctuary and other ocean and coastal resources by the public, the program is constructing a network of exhibits, signage, and kiosks. Whenever possible, sanctuaries will utilize existing aquaria, museums and other appropriate

facilities to develop cooperative centers where the public and environmental decision makers can gain direct, objective and focused information on conservation issues. These facilities serve as important windows into the resources of the Sanctuaries and act as a storefront for public interaction with NOAA programs. The goal of these exhibits is to share with the public these ocean treasures. In addition to these efforts, PAC funding supports operational facility requirements for NOAA-owned facilities, including safety improvements, ADA (Americans with Disabilities Act) upgrades, and replacement and repair.

The Outyear Funding Estimates are provided with the program change requested for this activity.

Schedule & Milestones:

- Conduct national competitions annually for CELCP and NERRS Acquisition/Construction to select projects for funding and report acres protected through the programs (FY 2012-2016)
- Conduct national competitions annually for NERRS Acquisition/Construction to select projects for funding and report acres protected through the program (FY 2012-2016)
- Completion of sanctuary administrative facilities and visitor centers at Gulf of the Farallones, GFMMS (FY 2012), Kihei, HI/HW (FY 2012), UC Santa Barbara, CINMS (FY 2012), Santa Cruz, MBNMS (FY 2012), Monterey Bay NMS (FY 2013), Key Largo, FKNMS (FY 2014), Kauai, HI/HW (FY 2015), and Savannah, GRNMS (FY 2016)

Deliverables:

- Average of 4,000 additional acres of coastal habitat acquired or put under easement annually through the CELCP and CZMP to conserve natural resources of national and state importance

Performance Goals and Measurement Data

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Annual number acres acquired or designated for long-term conservation (CELCP and NERRS)	Target	Target	Target	Target	Target	Target
	~4,100	~4,000	TBD	TBD	TBD	TBD
<p>Description: This measure tracks NOAA's success through the National Estuarine Research Reserve System (NERRS), Coastal Zone Management (CZM) Program and Coastal and Estuarine Land Conservation Program (CELCP) programs in protecting habitats identified in the Coastal Zone Management Act as priorities. The measure tracks the number of acres acquired with NOAA funds by state or local government agencies from willing sellers for long-term protection of important coastal habitats and opportunities for recreational access to the coast through the CZM Program and, CELCP, or the number of acres designated for long-term protection by NOAA and state partners through the NERRS. This measure parallels Measure 18d, however targets are represented in a different manner. The Annual Performance Plan targets for this measure represent the number of acres acquired or designated for long-term conservation in a given year. In the President's Budget, however, the targets represent the number of acres that are estimated to be acquired or designated with the expected funding appropriated for that year, although the actual acquisition or designation may occur in a later year.</p>						

PROGRAM CHANGES FOR FY 2012:

Coastal and Estuarine Land Conservation Program (Base Funding: 1 FTE and \$20,000,000; Program Change: +0 FTE and +\$5,000,000): NOAA requests an increase of \$5,000,000 and 0 FTE for a total of \$25,000,000 and 1 FTE to conserve high priority coastal and estuarine lands that have significant ecological value and support NOAA's stewardship requirements.

Proposed Actions:

With this increase, NOAA will provide funding for additional land conservation projects identified through a competitive selection process, based on habitat types or geographic areas identified by coastal states as having high ecological, conservation, recreational, historic or aesthetic value that are threatened by development, such as tidal or freshwater wetlands, stream buffers, and floodplains. The Program gives priority to lands which can be effectively managed and protected and have significant ecological value. This increase of \$5,000,000 for land conservation grants will support approximately 2-4 additional conservation projects per year. This funding will also enable NOAA to ensure that conservation projects satisfy the requirements of NEPA and meet Federal appraisal standards.

Statement of Need and Economic Benefits

Coastal counties are home to almost 153 million people, about 53 percent of the total U.S. population and by 2015 the coastal population is estimated to reach 165 million (*Population Trends Along the Coastal United States: 1980-2008*, NOAA 2004). As the coastal population continues to increase, there are many competing demands for limited coastal areas and growing pressure to develop the remaining lands. Coastal lands and estuaries are ecologically productive and economically important. They serve as nursery habitat for the Nation's commercial fish and shellfish as well as nesting and foraging habitat for coastal birds, filter pollutants from storm water runoff, control flooding after severe storm events, and provide opportunities for coastal recreation and nature-based tourism. NOAA has found that the demand for funding to conserve these important coastal and estuarine areas is significantly higher than the amounts available in recent years. This increase will enhance NOAA's ability to fund high priority projects each year, conserving additional important coastal and estuarine land areas.

Base Resource Assessment:

The base resources for this activity are described in the Ocean and Coastal Management base narrative.

Schedule and Milestones:

- Conduct national competitions annually for CELCP and NERRS Acquisition to select projects for funding and report acres protected through the programs (FY 2012-2016)

Deliverables:

- Average of 5,300 additional acres of coastal habitat acquired or put under easement annually through the CELCP and CZMP to conserve natural resources of national and state importance

OUTYEAR FUNDING ESTIMATES (BA in thousands)								
	FY 2011 & Prior	FY 2012	FY 2013	FY 2015	FY 2015	FY 2016	Estimate to complete	Total Program Estimate
CELCP								
Change from FY 2011 CR		+5000						
Total Request	271,424	25,000	TBD	TBD	TBD	TBD	N/A	N/A

Performance Goals and Measurement Data

Performance Measure	Annual	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
number acres acquired or designated for long-term conservation (Measure 18d -CELCP contribution only)							
With Increase		n/a	~5,300	TBD	TBD	TBD	TBD
Without Increase		~4,000	~4,000	~2,000	~2,000	~2,000	~2,000
<p>Description: Measure 18d tracks NOAA's success through the National Estuarine Research Reserve System (NERRS), Coastal Zone Management (CZM) Program and Coastal and Estuarine Land Conservation Program (CELCP) programs in protecting habitats identified in the Coastal Zone Management Act as priorities. The measure tracks the number of acres acquired with NOAA funds by state or local government agencies from willing sellers for long-term protection of important coastal habitats and opportunities for recreational access to the coast through the CZM Program and, CELCP, or the number of acres designated for long-term protection by NOAA and state partners through the NERRS. The protected acres represent the number of acres expected to be protected with the funding provided in a fiscal year. Values above are a subset of measure 18d corresponding to funds provided for the CELCP program.</p>							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Subactivity: Procurement, Acquisition and Construction

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	250
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	4,750
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>5,000</u>

National Estuarine Research Reserve System (NERRS) (PAC) (Base Funding: 0 FTE and \$3,890,000; Program Change: -0 FTE and -\$2,200,000): NOAA requests a decrease of \$2,200,000 and 0 FTE for a total of \$1,690,000 and 0 FTE to support new acquisition and construction activities.

Proposed Actions:

NOAA requests a decrease in NERRS Construction and Land Acquisition. In FY 2012 NOAA is requesting an increase for the Coastal & Estuarine Land Conservation Program (CELCP). Under the Omnibus Public Lands Act, no less than 15 percent of CELCP funds shall be available for acquisitions benefitting NERRS. The remaining \$1.69 million will be competitively awarded for high priority NERRS construction activities.

Statement of Need and Economic Benefits:

The Nation's coastal and ocean areas represent some of its most ecologically and economically important regions. Coastal counties are also the most densely populated part of the U.S., an area that is on average two to three times more densely populated than the Nation as a whole. Congress recognized this fact in 1972 when it passed the Coastal Zone Management Act (CZMA). The CZMA declares that it is the national policy "to encourage and assist the states to exercise effectively their responsibilities in the coastal zone through development and implementation of management programs...giving full consideration to ecological, cultural, historic and esthetic values as well as the need for compatible economic development." The importance of these areas and the need for this program has been recognized not only by the CZMA, but more recently by the National Ocean Policy, which adopted the nine priorities identified in the Final Recommendations of the Interagency Ocean Policy Task Force through Executive Order 13547 (July 19, 2010).

The CZMA established a national framework for coastal protection, including creation of the National Estuarine Research Reserve System (Section 315 CZMA), a national network of estuarine protected areas representing the diverse biological and physical characteristics of estuarine systems of the United States. Reserves are owned and operated by state agencies or universities. Reserves serve as living laboratories and local, regional, and national sources of scientific and technical information, training, and education on estuaries. The reserve system serves as a testing ground for the improvement of coastal resource management through direct resource management and restoration, science, and the translation and dissemination of information to coastal decision makers, teachers, students, and the public.

Federal NERRS funding (70 percent) is matched by the states (30 percent) for Reserve operations, research, monitoring, training, education and facilities construction. Federal NERRS funding (50 percent) for land acquisition is also matched by the states (50 percent).

Base Resource Assessment:

The base resources for this activity are described in the Procurement, Acquisition and Construction base narrative.

Schedule and Milestones:

- Conduct national competitions annually for NERRS Acquisition/Construction to select projects for funding and report acres protected through the program (FY 2012-2016)

Deliverables:

- Two to five competitively awarded projects annually

OUTYEAR FUNDING ESTIMATES (BA in Thousands)								
	FY 2011 & Prior	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	Estimate to Complete	Total Program Estimate
National Estuarine Research Reserve Construction and Land Acquisition								
Change from FY 2011 CR		-2,200						
Total Request	95,246	1,690	TBD	TBD	TBD	TBD	N/A	N/A

Performance Goals and Measurement Data

Performance Measure: Annual number acres acquired or designated for long-term conservation of NERRS	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Decrease	n/a	0	TBD	TBD	TBD	TBD
Without Decrease	~100	TBD	TBD	TBD	TBD	TBD
Description: Acres acquired or designated with NERRS PAC funding for long-term protection/conservation within NERRS sites.						

*NERRS PAC funding is awarded to a mix of acquisition and construction projects. Outyear targets are labeled "TBD" as the percentage of funding going to acquisition or construction related projects varies each year. In FY 2011, only one acquisition project is currently being considered for funding.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Subactivity: Procurement, Acquisition and Construction

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(2,200)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(2,200)</u>

Marine Sanctuaries Construction (Base Funding: 0 FTE and \$13,000,000; Program Change: 0 FTE and -\$7,505,000): NOAA requests a decrease of \$7,505,000 and 0 FTE for a total of \$5,495,000 and 0 FTE for Marine Sanctuaries construction. In the Consolidated Appropriations Act, 2010, Congress provided \$7,505,000 in additional funds for construction projects in the National Marine Sanctuaries Program. These additional funds are not required in FY 2012 as the President's FY 2012 Request includes \$5,495,000 for the National Marine Sanctuaries Program (NMSP) construction base to provide support for essential facilities support at the Nation's system of 13 Marine Sanctuaries and the Papahānaumokuākea Marine National Monument. In FY 2012, the Office of National Marine Sanctuaries plans to support construction related activities at Crissy Field, Kehei, and Cordell Banks, in addition to funding the Stellwagen Banks Marine Operations Center, Flower Garden Banks renovations, and the completion of Galveston projects which are currently underway. The program is implementing a comprehensive facilities plan that prioritizes needs and opportunities at individual sites for constructing exhibits, collaborative education and visibility projects, and operational needs. PAC funding supports operational facility requirements for NOAA-owned facilities, including safety improvements, Americans with Disabilities Act (ADA) upgrades, and replacement and repair. National Marine Sanctuaries sites provide cooperative centers where the public and environmental decision makers can gain direct, objective and focused information on conservation issues.

OUTYEAR FUNDING ESTIMATES (BA in Thousands)								
	FY 2011 & Prior	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	Estimate to Complete	Total Program Estimate
National Marine Sanctuaries Construction Base								
Change from FY 2011 CR		-7,505						
Total Request	109,856	5,495	TBD	TBD	TBD	TBD	N/A	N/A

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Subactivity: Procurement, Acquisition and Construction

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(7,505)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(7,505)</u>

Congressionally Directed Projects (Base Funding: 0 FTE and \$4,000,000; Program Change: -0 FTE and -\$4,000,000): NOAA requests a decrease of \$4,000,000 to terminate the funding level that would continue under an annualized FY 2011 continuing resolution associated with the Congressionally directed projects identified in the Conference Report that accompanied the Consolidated Appropriations Act, 2010.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Ocean Service
Account: Procurement, Acquisition and Construction

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(443)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(3,557)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(4,000)</u>

APPROPRIATION: Damage Assessment and Restoration Revolving Fund

A National Oceanic and Atmospheric Administration (NOAA) Damage Assessment and Restoration Revolving Fund was established, under Section 1012(a) of the Oil Pollution Act of 1990, for deposit of sums provided by any party or governmental entity for response to discharges of oil or releases of hazardous substances, for assessment of damages to NOAA trust resources resulting from those discharges and releases, and for the restoration of the injured natural resources. Through the Revolving Fund, NOAA:

- Retains funds that are recovered through settlement or awarded by a court for restoration of injured natural resources, and retains reasonable costs of conducting spill response and damage assessments that are recovered by NOAA through negotiated settlement, court award, or other reimbursement.
- Ensures funds deposited shall remain available to the trustee, without further appropriation, until expended to pay costs associated with response, damage assessment, and restoration of natural resources.

The NOAA Damage Assessment and Restoration Revolving Fund facilitates and sustains: (1) natural resource damage assessment while the Departments of Commerce and Justice seek full reimbursement from potentially responsible parties; and (2) restoration, replacement, or acquisition of the equivalent of injured or lost natural resources, including resources of National Marine Sanctuaries and National Estuarine Research Reserves, tidal wetlands and other habitats, for which NOAA is trustee. These program functions are conducted jointly within NOAA by the Office of General Counsel, the National Ocean Service, and the National Marine Fisheries Service.

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Department of Commerce
 National Oceanic and Atmospheric Administration
 Damage Assessment and Restoration Revolving Fund
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2010 Enacted	16	16	3,000	15,600
less: Obligations from prior year balances	0	0	0	0
less: Unobligated balance transferred, DOI	0	0	0	0
plus: 2012 Adjustments to Base	0	0	0	0
FY 2012 Base	16	16	3,000	15,600
plus: 2012 Program Changes	0	0	0	0
FY 2012 Estimate	16	16	3,000	15,600

Comparison by activity/subactivity		FY 2010 Actuals		FY 2011 Currently Available		FY 2012 Base Program		FY 2012 Estimate		Increase/Decrease	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Damage Assessment and Restoration Revolving Fund	Pos/BA	16	3,222	16	3,300	16	3,000	16	3,000	0	0
	FTE/OBL	7	8,755	16	55,326	16	15,600	16	15,600	0	0
Total: Damage Assessment and Restoration Revolving Fund	Pos/BA	16	3,222	16	3,300	16	3,000	16	3,000	0	0
	FTE/OBL	7	8,755	16	55,326	16	15,600	16	15,600	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Damage Assessment and Restoration Revolving Fund
SUMMARY OF RESOURCE REQUIREMENTS
(Dollar amounts in thousands)

	FY 2010		FY 2011		FY 2012		FY 2012		Increase/ Decrease	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Mandatory Obligation	7	8,755	16	55,326	16	15,600	16	15,600	0	0
Total Obligations	7	8,755	16	55,326	16	15,600	16	15,600	0	0
Adjustments to Obligations:										
Federal funds	0	(100)	0	0	0	0	0	0	0	0
New offsetting collections	0	(4,662)	0	(16,600)	0	(7,600)	0	(7,600)	0	0
Recoveries	0	(184)	0	0	0	0	0	0	0	0
Unobligated balance, adj. SOY	0	(26,725)	0	(30,426)	0	0	0	0	0	0
Unobligated balance, transferred (From DOI)	0	(4,288)	0	(5,000)	0	(5,000)	0	(5,000)	0	0
Unobligated balance, EOY	0	30,426	0	0	0	0	0	0	0	0
Total Budget Authority	7	3,222	16	3,300	16	3,000	16	3,000	0	0
Financing from Transfers and Other:										
Transfer from Other Accounts	0	0	0	0	0	0	0	0	0	0
Transfer to/from Dept of Interior	0	(3,222)	0	(3,300)	0	(3,000)	0	(3,000)	0	0
Net Appropriation	7	0	16	0	16	0	16	0	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Damage Assessment and Restoration Revolving Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

Object Class	2,010 Actuals	2011 Currently Available	2012 Base	2012 Estimate	Increase/ (Decrease) over 2012 Base
11 Personnel compensation					
11.1 Full-time permanent	1,373	1,373	1,373	1,373	0
11.3 Other than full-time permanent	8	8	8	8	0
11.5 Other personnel compensation	29	29	29	29	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	1,410	1,410	1,410	1,410	0
12.1 Civilian personnel benefits	552	552	552	552	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	210	210	210	210	0
22 Transportation of things	4	4	4	4	0
23.1 Rental payments to GSA	130	130	130	130	0
23.2 Rental payments to others	6	6	6	6	0
24 Printing and reproduction	4	4	4	4	0
25.1 Advisory and assistance services	844	844	844	844	0
25.2 Other services	3,458	50,029	10,303	10,303	0
25.3 Other purchases of goods and services from Govt accounts	182	182	182	182	0
26 Supplies and materials	146	146	146	146	0
31 Equipment	144	144	144	144	0
41 Grants, subsidies and contributions	1,652	1,652	1,652	1,652	0
42 Insurance claims and indemnities	1	1	1	1	0
43 Interest and dividends	12	12	12	12	0
99 Total Obligations	8,755	55,326	15,600	15,600	0

Department of Commerce
National Oceanic and Atmospheric Administration
Damage Assessment and Restoration Revolving Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

	2,010 Actuals	2011 Currently Available	2012 Base	2012 Estimate
Less collections	(4,762)	(16,600)	(7,600)	(7,600)
Less recoveries	(184)	0	0	0
Less unobligated balance, SOY	(26,725)	(30,426)	0	0
Plus unobligated balance, EOY	30,426	0	0	0
Plus unobligated balance transferred	(4,288)	(5,000)	(5,000)	(5,000)
Total Budget Authority	3,222	3,300	3,000	3,000
Transfers:				
Transfer from Other Accounts	0	0	0	0
Transfer from DOI	(3,222)	(3,300)	(3,000)	(3,000)
Discretionary Budget Authority	0	0	0	0
Personnel Data				
Full-Time equivalent Employment:				
Full-time permanent	7	16	16	16
Other than full-time permanent	0	0	0	0
Total	7	16	16	16
Authorized Positions:				
Full-time permanent	16	16	16	16
Other than full-time permanent	0	0	0	0
Total	16	16	16	16

Appropriation: Coastal Zone Management Fund

Section 308 of the Coastal Zone Management Act authorizes the CZMF to be used for the following purposes:

- Expenses incident to the administration of the Coastal Zone Management Act;
- Projects to address management issues which are regional in scope, including interstate projects;
- Demonstration projects which have high potential for improving coastal zone management, especially at the local level;
- Emergency grants to state coastal zone management agencies to address unforeseen or disaster-related circumstances;
- Appropriate awards recognizing excellence in coastal management;
- Program Development Grants; and
- Financial support to coastal States for use in investigating and applying the public trust doctrine to implement State management programs.

Loans under this program were made prior to 1992, but balances were not transferred to the General Fund in accordance with the Federal Credit Reform Act of 1990 (FCRA), even though the account effectively serves as a liquidating account. To resolve this inconsistency, the Budget proposes to cancel all balances in the Coastal Zone Management Fund, make future payments to the Fund subject to FCRA, and eliminate the annual transfer from this account to the Operations, Research, and Facilities account.

PROPOSED LEGISLATION:

All balances in the Coastal Zone Management Fund, whether unobligated or unavailable, are hereby permanently cancelled, and notwithstanding Section 308(b) of the Coastal Zone Management Act of 1972, as amended (16 U.S.C. 1456a), any future payments to the Fund made pursuant to sections 307 (16 U.S.C. 1456) and 308 (16 U.S.C. 1456a) of the Coastal Zone Management Act of 1972, as amended, shall, in this fiscal year and any future fiscal years, be treated in accordance with the Federal Credit Reform Act of 1990, as amended.

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Department of Commerce
 National Oceanic and Atmospheric Administration
 Coastal Zone Management Fund
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2010 Enacted	0	0	(1,500)	0
less: Obligations from prior year balances	0	0	0	0
less: Unobligated balance transferred, DOI	0	0	0	0
plus: 2012 Adjustments to Base	0	0	0	0
FY 2012 Base	0	0	(1,500)	0
plus: 2012 Program Changes	0	0	0	0
FY 2012 Estimate	0	0	(1,500)	0

Comparison by activity/subactivity		FY 2010 Actuals		FY 2011 Currently Available		FY 2012 Base Program		FY 2012 Estimate		Increase/Decrease	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Coastal Zone	Pos/BA	0	(284)	0	(1,500)	0	(1,500)	0	(1,500)	0	0
Management Fund	FTE/OBL	0	0	0	0	0	0	0	0	0	0
Total: Coastal Zone	Pos/BA	0	(284)	0	(1,500)	0	(1,500)	0	(1,500)	0	0
Management Fund	FTE/OBL	0	0	0	0	0	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Coastal Zone Management Fund
SUMMARY OF RESOURCE REQUIREMENTS
(Dollar amounts in thousands)

	FY 2010		FY 2011		FY 2012		FY 2012		Increase/ Decrease	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Adjustments to Obligations:										
New offsetting collections	0	(284)	0	(1,500)	0	(1,500)	0	(1,500)	0	0
Recoveries	0	0	0	0	0	0	0	0	0	0
Unobligated balance, adj. SOY	0	0	0	0	0	0	0	0	0	0
Unobligated balance, EOY	0	0	0	0	0	0	0	0	0	0
Total Budget Authority	0	(284)	0	(1,500)	0	(1,500)	0	(1,500)	0	0
Financing from Transfers and Other:										
Spending authority previously unavailable	0	0	0	0	0	0	0	0	0	0
Previously unavailable/unobligated balances	0	(2,716)	0	(1,500)	0	(1,500)	0	0	0	1,500
Transfer to ORF	0	3,000	0	(1,500)	0	(1,500)	0	0	0	1,500
Transfer to Treasury	0	3,000	0	3,000	0	3,000	0	1,500	0	(1,500)
Net Appropriation	0	0	0	0	0	0	0	0	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Coastal Zone Management Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

Object Class	2010 Actuals	2011 Currently Available	2012 Base	2012 Estimate	Increase/ (Decrease) over 2012 Base
11 Personnel compensation					
11.1 Full-time permanent	0	0	0	0	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	0	0	0	0	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	0	0	0	0	0
12.1 Civilian personnel benefits	0	0	0	0	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	0	0	0	0	0
22 Transportation of things	0	0	0	0	0
23.1 Rental payments to GSA	0	0	0	0	0
23.2 Rental payments to others	0	0	0	0	0
24 Printing and reproduction	0	0	0	0	0
25.1 Advisory and assistance services	0	0	0	0	0
25.2 Other services	0	0	0	0	0
25.3 Other purchases of goods and services from Govt accounts	0	0	0	0	0
26 Supplies and materials	0	0	0	0	0
31 Equipment	0	0	0	0	0
41 Grants, subsidies and contributions	0	0	0	0	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	0	0	0	0	0
99 Total Obligations	0	0	0	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Coastal Zone Management Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

	2010 Actuals	2011 Currently Available	2012 Base	2012 Estimate	Increase/ (Decrease) over 2012 Base
Less prior year recoveries	0	0	0	0	0
Less unobligated balance, SOY	0	0	0	0	0
Plus unobligated balance, EOY	0	0	0	0	0
Offsetting collections, mandatory	(284)	0	0	0	0
Total Budget Authority	(284)	0	0	0	0
Personnel Data					
Full-Time equivalent Employment:					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Total	0	0	0	0	0
Authorized Positions:					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Total	0	0	0	0	0

APPROPRIATION: COASTAL IMPACT ASSISTANCE PROGRAM

Congress authorized the Coastal Impact Assistance Program (CIAP) under §903 of the FY 2001 Commerce, State, Justice appropriations act to assist states in mitigating the impacts from Outer Continental Shelf (OCS) oil and gas production. Congress appropriated \$150,000,000 in fiscal year 2001 to seven coastal states -- Alaska, California, Texas, Louisiana, Mississippi, Alabama, and Florida -- to implement this program. Funds were expended according to Coastal Impact Assistance Plans developed by the states.

The National Ocean Service (NOS) within the National Oceanic and Atmospheric Administration (NOAA) was charged with implementing this program at the Federal level.

FY 2001 was the only year NOAA received an appropriation for these activities, but NOAA continues to receive deobligations from this grant program, which are deposited in this account.

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Department of Commerce
 National Oceanic and Atmospheric Administration
 Coastal Impact Assistance Fund
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2010 Enacted	0	0	0	0
less: obligations from prior year	0	0	0	0
plus: 2012 Adjustments to Base	0	0	0	0
FY 2012 Base	0	0	0	0
plus: 2012 Program Changes	0	0	0	0
FY 2012 Estimate	0	0	0	0

Comparison by activity/subactivity		FY 2010 Actuals		FY 2011 Currently Available		FY 2012 Base Program		FY 2012 Estimate		Increase/Decrease	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Coastal Impact Assistance Fund	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	155	0	0	0	0	0	0	0	0
Total: Coastal Impact Assistance Fund	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	155	0	0	0	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Coastal Impact Assistance Fund
SUMMARY OF RESOURCE REQUIREMENTS
(Dollar amounts in thousands)

	FY 2010 Actuals		FY 2011 Currently Available		FY 2012 Base Program		FY 2012 Estimate		Increase/ Decrease	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	0	155	0	68	0	0	0	0	0	0
Total Obligations	0	155	0	68	0	0	0	0	0	0
Adjustments to Obligations:										
Non-Federal Sources	0	0	0	0	0	0	0	0	0	0
Recoveries	0	(68)	0	0	0	0	0	0	0	0
Unobligated balance, adj. SOY	0	(155)	0	(68)	0	0	0	0	0	0
Unobligated balance, EOY	0	68	0	0	0	0	0	0	0	0
Total Budget Authority	0	0	0	0	0	0	0	0	0	0
Financing from Transfers and Other:										
Net Appropriation	0	0	0	0	0	0	0	0	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Coastal Impact Assistance Fund
SUMMARY OF RESOURCE REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

Object Class	2010 Actuals	2011 Currently Available	2012 Base	2012 Estimate	Increase/ (Decrease) over 2012 Base
11.9 Total personnel compensation	0	0	0	0	0
23.3 Commun., util., misc. charges	0	0	0	0	0
25.2 Other services	155	68	0	0	0
41 Grants, subsidies and contributions	0	0	0	0	0
44 Refunds	0	0	0	0	0
99 Total Obligations	155	68	0	0	0
Non-Federal Sources	0	0	0	0	0
Less prior year recoveries	(68)	0	0	0	0
Less unobligated balance, SOY	(155)	(68)	0	0	0
Plus unobligated balance, EOY	68	0	0	0	0
Total Budget Authority	0	0	0	0	0
Personnel Data					
Full-Time equivalent Employment:					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Total	0	0	0	0	0
Authorized Positions:					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Total	0	0	0	0	0

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APPROPRIATION: SANCTUARIES ASSET FORFEITURE FUND

The Sanctuaries Enforcement Asset Forfeiture Fund receives proceeds from civil penalties and forfeiture claims against responsible parties, as determined through court settlements or agreements, for violations of NOAA sanctuary regulations. Penalties received are held in sanctuary site-specific accounts from year to year (technically reimbursables), as the funds are spent on resource protection within the sanctuary site where the penalty or forfeiture occurred. Funds are expended for resource protection purposes which may include all aspects of law enforcement (from equipment to labor), community oriented policing programs, and other resource protection and management measures such as the installation of mooring buoys or restoration of injured resources.

PROPOSED LEGISLATION:

Provided further, There is established in the Treasury a non-interest bearing fund to be known as the "Sanctuaries Enforcement Asset Forfeiture Fund," which shall consist of all sums received as fines, penalties, and forfeitures of property for violations of any provisions of 16 U.S.C. 1437: Provided further, All unobligated balances that have been collected pursuant to 16 U.S.C. 1437 shall be transferred from the Operations, Research, and Facilities account into the Sanctuaries Enforcement Asset Forfeiture Fund and shall remain available until expended.

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Department of Commerce
 National Oceanic and Atmospheric Administration
 Sanctuaries Asset Forfeiture Fund
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2010 Enacted	0	0	0	0
less: obligations from prior year	0	0	0	0
plus: 2012 Adjustments to Base	0	0	1,000	1,000
FY 2012 Base	0	0	1,000	1,000
plus: 2012 Program Changes	0	0	0	0
FY 2012 Estimate	0	0	1,000	1,000

Comparison by activity/subactivity		FY 2010 Actuals		FY 2011 Currently Available		FY 2012 Base Program		FY 2012 Estimate		Increase/Decrease	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Sanctuaries Asset	Pos/BA	0	0	0	0	0	1,000	0	1,000	0	0
Forfeiture Fund	FTE/OBL	0	0	0	0	0	1,000	0	1,000	0	0
Total: Sanctuaries Asset	Pos/BA	0	0	0	0	0	1,000	0	1,000	0	0
Forfeiture Fund	FTE/OBL	0	0	0	0	0	1,000	0	1,000	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Sanctuaries Asset Forfeiture Fund
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	FY 2010		FY 2011		FY 2012		FY 2012		Increase/ Decrease	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Total Obligations	0	0	0	0	0	1,000	0	1,000	0	0
Adjustments to Obligations:										
Non-Federal Sources	0	0	0	0	0	0	0	0	0	0
Recoveries	0	0	0	0	0	0	0	0	0	0
Unobligated balance, adj. SOY	0	0	0	0	0	0	0	0	0	0
Unobligated balance, EOY	0	0	0	0	0	0	0	0	0	0
Total Budget Authority	0	0	0	0	0	1,000	0	1,000	0	0
Financing from Transfers and Other:										
Net Appropriation	0	0	0	0	0	1,000	0	1,000	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Sanctuaries Asset Forfeiture Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
 (Dollar Amounts in Thousands)

Object Class	2010 Actuals	2011 Currently Available	2012 Base	2012 Estimate	Increase/ (Decrease) over 2012 Base
11.9 Total Personnel Compensation	0	0	0	0	0
23.3 Commun., util., misc. charges	0	0	0	0	0
25.2 Other services	0	0	1,000	1,000	0
41 Grants, subsidies and contributions	0	0	0	0	0
44 Refunds	0	0	0	0	0
99 Total Obligations	0	0	1,000	1,000	0
Non-Federal Sources	0	0	0	0	0
Less prior year recoveries	0	0	0	0	0
Less unobligated balance, SOY	0	0	0	0	0
Plus unobligated balance, EOY	0	0	0	0	0
Total Budget Authority	0	0	1,000	1,000	0

Personnel Data

Full-Time equivalent Employment:

Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Total	0	0	0	0	0

Authorized Positions:

Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Total	0	0	0	0	0

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BUDGET ACTIVITY: NATIONAL MARINE FISHERIES SERVICE

For FY 2012, NOAA requests a net decrease of \$7,077,000 and an increase of 75 FTE over the FY 2010 enacted level for a total of \$1,001,104,000 and 2,897 FTE for the National Marine Fisheries Service. This increase includes \$19,935,000 and 42 FTEs in inflationary adjustments.

BASE JUSTIFICATION FOR FY 2012:

National Marine Fisheries Service Overview:

The National Marine Fisheries Service (NMFS) is responsible for the management and conservation of living marine resources within the U.S. Exclusive Economic Zone (EEZ)—the area extending from three to 200 nautical miles offshore. NMFS provides critical support, and scientific and policy leadership in the international arena, and plays a key role in the management of living marine resources in coastal areas under state jurisdiction. NMFS implements science-based conservation and management actions aimed at sustaining long-term use and promoting the health of coastal and marine ecosystems. These actions result in maximized benefits to the Nation from the use of living marine resources. Programmatic authority for fisheries management, species protection, and habitat conservation activities is derived primarily from the Magnuson-Stevens Fishery Conservation and Management Act (MSA), Marine Mammal Protection Act (MMPA), and Endangered Species Act (ESA). Other acts provide additional authority for enforcement, seafood safety, habitat restoration, and cooperative efforts with states, tribes, interstate fishery commissions, and other countries. All of these activities rely on a strong scientific and research competency to support the challenging public policy decision process associated with NMFS' stewardship responsibility.

The National Marine Fisheries Service budget is organized into five subactivities under the Operations, Research and Facilities appropriation:

- Protected Species Research and Management (\$206,563,000 and 817 FTE) includes Protected Species Research and Management Programs Base, Species Recovery Grants, Marine Mammals, Marine Turtles, Other Protected Species (Marine Fish, Plants, and Invertebrates), Atlantic Salmon, and Pacific Salmon.
- Fisheries Research and Management (\$440,274,000 and 1,366 FTE) includes Fisheries Research and Management Programs, National Catch Share Program, Expand Annual Stock Assessments - Improve Data Collection, Economics & Social Sciences Research, Salmon Management Activities, Regional Councils and Fisheries Commissions, Fisheries Statistics, Fish Information Networks, Survey and Monitoring Projects, Fisheries Oceanography, American Fisheries Act, Interjurisdictional Fisheries Grants, National Standard 8, Reduce Fishing Impacts on Essential Fish Habitat (EFH), Reducing Bycatch, and Product Quality and Safety.
- Enforcement and Observers/Training (\$109,822,000 and 385 FTE) includes Enforcement and Observers/Training.
- Habitat Conservation and Restoration (\$51,056,000 and 149 FTE) includes Sustainable Habitat Management and Fisheries Habitat Restoration.
- Other Activities Supporting Fisheries (\$81,484,000 and 143 FTE) includes Antarctic Research, Aquaculture, Climate Regimes & Ecosystem Productivity, Computer Hardware and Software, Cooperative Research, Information Analyses & Dissemination, Magnuson-Stevens (MSA) Implementation off Alaska, Marine Resources Monitoring,

Assessment & Prediction Program (MarMap), National Environmental Policy Act (NEPA), NMFS Facilities Maintenance, Southwest Fisheries Science Center, and Regional Studies.

The National Marine Fisheries Service budget includes the following other accounts:

- Fishermen’s Contingency Fund (\$0 and 1 FTE)
- Pacific Coastal Salmon Recovery Fund (\$80,000,000 and 0 FTE)
- Promote and Develop Fisheries (\$5,000,000 and 4 FTE) includes S-K Grants
- Environmental Improvement and Restoration Fund (\$1,467,000 and 0 FTE)
- Limited Access System Administration Fund (\$9,675,000 and 0 FTE)
- Foreign Fishing Observer Fund (\$0 and 0 FTE)
- Fisheries Financing Program (\$0 and 0 FTE)
- Marine Mammal Unusual Mortality Event Fund (\$0 and 0 FTE)
- Federal Ship Financing Obligations (\$0 and 0 FTE)
- Fisheries Finance Program Account Appropriation (\$0 and 0 FTE)
- Western Pacific Sustainable Fisheries Fund Appropriation (\$1,000,000 and 0 FTE)
- Fisheries Asset Forfeiture Fund (\$8,000,000 and 0 FTE)

In partnership with other federal agencies and with state and local governments, NMFS is responsible for managing living marine resources along the Nation’s coastal zone and protected areas. This is done through planning for, mitigating, and responding to hazardous events; restoring degraded habitats; protecting and ensuring wise and appropriate use of ocean, coastal, and Great Lakes living resources; and enabling domestic marine aquaculture production. NMFS provides advice, technical tools, information, and training to coastal residents, communities, and other decision makers and users of ocean, coastal, and Great Lakes areas. NMFS is also responsible for protecting, restoring, and managing species listed under the ESA and MMPA, as well as their habitats, and for managing and rebuilding fish stocks to population levels that will support economically viable and sustainable harvest opportunities.

Ecosystem-based management is an important component of NMFS’ conservation and management practices. By understanding the complex ecological and socioeconomic environments in which living marine resources exist, managers may be able to better anticipate and predict the effects of management actions on a given coastal or marine ecosystem. NMFS uses the following strategies for implementing ecosystem-based management:

- Engage and collaborate with partners to achieve regional objectives by delineating regional ecosystems, working with regional ecosystem councils, and implementing cooperative strategies to improve regional ecosystem health.
- Where appropriate, seek to transform the way fisheries are managed, relying on systems of catch shares or individual fishing privilege programs. These market-based approaches to fisheries management—variously called catch shares, limited access privilege programs, and sector management—create incentives for fishermen to engage in sustainable and economically efficient fishing practices that conserve and protect the fishery, thereby maximizing the current and future value of the resource.
- Improve management of living marine resources by advancing the understanding of ecosystems through better simulation and predictive models.

- Develop coordinated regional and national outreach and education efforts to improve public understanding and involvement in stewardship of coastal and marine ecosystems.
- Engage in technological and scientific exchange with domestic and international partners to protect, restore, and manage living marine resources within and beyond the Nation's borders.

Work is conducted by NMFS field elements, with oversight, review, and direction provided from NMFS headquarters in Silver Spring, Maryland. The field structure consists of six Regional Offices, each with a Science Center that conducts research and directs the work carried out by the other laboratories and satellite/special purpose facilities in that region.

Major NMFS facilities are located at the following sites:

Northeast: Regional Office - Gloucester, MA
 Science Center - Woods Hole, MA
 Major Laboratories - Milford, CT; Narragansett, RI; J.J. Howard, Sandy Hook, NJ
 Satellite/Special Purpose Facilities - Smithsonian (National Systematics Lab), Washington, DC

Southeast: Regional Office - St. Petersburg, FL
 Science Center - Miami, FL
 Major Laboratories - Beaufort, NC; Galveston, TX; Panama City, FL; Pascagoula, MS
 Satellite/Special Purpose Facilities - Stennis Space Center (Bay St. Louis, MS)

Southwest: Regional Office - Long Beach, CA
 Science Center - La Jolla, CA
 Major Laboratories - Santa Cruz, CA
 Satellite/Special Purpose Facilities - Pacific Grove, CA

Northwest: Regional Office - Seattle, WA at Sand Point
 Science Center - Seattle, WA at Montlake
 Satellite/Special Purpose Facilities - Manchester, WA; Mukilteo, WA; Pasco, WA; Newport, OR; Hammond, OR

Alaska: Regional Office - Juneau, AK
 Science Center - Seattle, WA at Sand Point
 Major Laboratories – Ted Stevens Marine Research Institute, AK; Auke Bay, AK; Kodiak, AK
 Satellite/Special Purpose Facilities - Little Port Walter, AK

Pacific Islands: Regional Office – Honolulu, HI
 Science Center – Honolulu, HI

Research and Development Investments:

The NOAA FY 2012 Budget estimates for its activities, including research and development programs, are the result of an integrated requirements-based strategic planning process. This process provides the structure to link NOAA's strategic vision with programmatic detail and budget development, with the goal of maximizing resources while optimizing capabilities. NMFS requests \$84,026,000 for investments in R&D and infrastructure to support R&D in the FY 2012 Budget.

NOAA's strategic planning process makes specific reference to the objectives and milestones outlined in the NOAA 5-Year Research Plan for 2008-2012. The strict management of planning against these investment criteria, objectives, and milestones leads to NOAA budget proposals that reflect the research and development needs of the organization. The NOAA Research Council - an internal body composed of senior scientific personnel from every line office in the agency - is tasked with developing the 5-Year Research Plan, and provides corporate oversight to ensure that NOAA's research activities are of the highest quality, meet long-range societal needs, take advantage of emerging scientific and technological opportunities, and shape a forward-looking research agenda.

Significant Adjustments to Base:

NOAA requests an increase of 42 FTE and \$19,935,000 to fund adjustments to current programs for NMFS. The increase will also provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Services Administration (GSA).

NOAA also requests the following transfers for a net change to NOAA of \$0.

From Office	Line	To Office	Line	Amount
NMFS	Fisheries Research and Management Programs	NMFS	National Catch Share Program	\$11,400,000
NMFS	Cooperative Research	NMFS	National Catch Share Program	\$6,002,000
NMFS	Climate Regimes & Ecosystem Productivity	OAR	Integrated Ocean Acidification	\$1,500,000

NOAA requests technical adjustments to move \$6,002,000 from Cooperative Research and \$11,400,000 from Fisheries Research and Management Programs to National Catch Share Program to consolidate resources for the operations of the National Catch Share Program. NOAA also requests a technical adjustment to move \$1,500,000 from NMFS to Oceanic and Atmospheric Research (OAR). OAR will facilitate the integration of all NOAA ocean acidification activities into a NOAA ocean acidification program.

Other Adjustments:

The NOAA FY 2012 Budget for NMFS also requests other adjustments in the amount of \$9,559,000 to restore funds that were anticipated in FY 2011 to be transferred from the Department of Agriculture related to the Promote and Develop (P&D) account. The P&D transfer represents funds derived from duties on imported fisheries products and are transferred to NOAA from the Department of Agriculture. The annualized FY 2011 Continuing Resolution provided \$36,056,800, including carryover, less than requested in FY 2011 President's Budget due to a downturn in the international fisheries markets. To address the difference between

estimated and actual transfer amounts in FY 2011, NOAA allocated the shortfall in the transfer to each of its seven line offices, taking a 1.06 percent reduction to each Program, Project, or Activity (PPA) line. For FY 2012 NOAA requests an adjustment to offset the impact of the FY 2011 shortfall.

From Office	Line	To Office	Line	Amount
NMFS	All	NMFS	All	\$9,559,000

Administrative Cost Savings:

The Administration is pursuing an aggressive government-wide effort to curb non-essential administrative spending called the Administrative Efficiency Initiative (AEI). In order to be good stewards of taxpayer money the Federal Government should continue to seek ways to improve the efficiency of programs without reducing their effectiveness. As such, the President directed each agency to analyze its administrative costs and identify savings where possible. The National Marine Fisheries Service (NMFS) has targeted a number of areas to achieve these savings, at both the Line Office Headquarters level and through the program offices. After reviewing its administrative costs, NMFS will generate \$16,271,000 in administrative savings. In the area of human capital, NMFS expects to reduce its costs by delaying planned hires. Administrative savings in the area of logistics and general administrative support have been identified by changing lease plans and reducing plans for equipment purchases and printing. NMFS has also identified savings tied to IT related items, primarily through consolidating equipment and licensing through NOAALink. Using NOAALink, the NMFS anticipates saving money through more strategic sourcing of products and services. Consolidation of products will enable buying in bulk to reduce prices. Consolidation of services will result in dollar savings by reducing the number of contracts to be managed. In addition, NMFS expects to reduce costs through business process reengineering by reducing contract services. The \$16,271,000 in administrative savings discussed above represent real reductions to the National Marine Fisheries Service’s funding level and will help reduce overall spending by the Federal government.

Headquarters Administrative Costs:

In FY 2012, NMFS Line Office headquarters will use \$24,060,800 after instituting planned savings as a result of the AEI mentioned above in funds to support general management activities, financial and budgeting, and IT related expenses, as well as supporting facilities and other general operating costs. These funds also include support for service contracts, utilities, and rent charges from the General Services Administration. As part of the AEI, NMFS has reviewed its Line Office Headquarters costs and will be able to reduce previously planned costs by \$2,720,100. Specifically, NMFS will use headquarters administrative funds to support the following:

Headquarters Program Support Type	Description	FY 2012 Amount	FY 2012 FTE associated with NMFS Line Office HQ
General Management & Direction	Includes Assistant Administrator's office, public affairs, information services	\$9,514,700	28.0
CFO Operations	Includes Budget, Finance and Accounting	\$3,829,000	22.0
CIO Operations	Includes IT-related expenses and other CIO related activities	\$3,965,400	15.0
CAO Operations	Includes Facilities and Security costs, as well as other CAO related activities	\$6,430,000	6.5
Human Resources	All HR services, including EEO	\$2,792,900	14.0
Procurement services, Acquisitions, and Grants Management Operations		\$248,900	3.0
Total before AEI savings		\$26,780,900	88.5
<i>AEI Savings</i>		<i>(\$2,720,100)</i>	-
Total post AEI savings		\$24,060,800	88.5

NOAA recognizes the need to improve the transparency of the policies and procedures used by its line office headquarters to bill component programs for management and administrative services. NOAA is currently re-evaluating, standardizing, and documenting these policies and procedures for each line office. Prior to the beginning of FY 2012, NOAA will publish its policies and procedures for assessing headquarters and administrative costs within the line offices on the NOAA CFO public website along with other budget and finance documents. NOAA looks forward to working with the Congress and other interested parties to increase the transparency and confidence in NOAA's financial management.

APPROPRIATION: OPERATIONS, RESEARCH AND FACILITIES

SUBACTIVITY: PROTECTED SPECIES RESEARCH AND MANAGEMENT

The objectives of the Protected Species Research and Management program are to 1) provide accurate and timely information and analyses for the conservation of the Nation's living marine resources; and 2) implement and monitor living marine resource conservation measures to recover protected species. Protected species include those listed under the Endangered Species Act (ESA) and all marine mammals pursuant to the Marine Mammal Protection Act (MMPA). The ultimate desired outcome is to recover and sustain all protected species and have them be fully functioning components of their ecosystems.

NMFS is responsible for the conservation of species through implementation of the ESA, MMPA, and other statutes and international treaties and conventions (e.g., the Convention on International Trade in Endangered Species). In order for NMFS to administer the conservation and management activities required to meet these mandates, NMFS reviews Federal activities to ensure they are not likely to jeopardize the continued existence of threatened and endangered species and that they have a negligible impact on marine mammal populations. NMFS also administers the exceptions to the prohibition on taking of protected species that are available to the public. Examples of activities that are reviewed include commercial fishing, commercial and military shipping, hydroelectric dams and power plants, discharge of effluents, ocean dumping, dredging, and logging.

NMFS also develops recovery and conservation plans to guide how threats to species' existence can be reduced and eliminated. NMFS implements conservation in cooperation with states, territories and tribes who have the local knowledge and expertise. Conservation may also include promulgating regulations to ensure that lawful activities are compatible with species recovery. For example, NMFS promulgated regulations to reduce ship speed in coastal waters to avoid striking endangered whales. To ensure its decisions are based on the best available science, NMFS conducts scientific investigations into the status of protected species populations, their abundance and distribution, various life history and population parameters, habitat characterizations and use, and the potential impacts of human activities, as well as, methods to minimize or mitigate adverse effects of human activities.

Protected Species Proactive Conservation and Listings: NMFS shares the responsibility for implementing the ESA and MMPA with the Department of the Interior's (DOI) Fish and Wildlife Service. In general, DOI is responsible for the conservation of terrestrial and aquatic (freshwater) organisms and some marine mammals. NMFS is responsible for conservation of living marine resources, which includes most marine mammals, most marine and anadromous fish (both commercially valuable and non-harvested species), turtles at sea, marine invertebrates (including corals), and marine plants. NMFS is charged with three main tasks: 1) regulating human activities to provide for recovery and conservation of marine mammals and marine ESA-listed species, 2) pursuing proactive conservation efforts, and 3) conducting scientific investigations into the status of protected species populations to understand the factors affecting them. NMFS also coordinates outreach and education activities, as well as international activities related to protected species. This work cuts across all program sectors, from proactive conservation efforts to recovery.

Proactive conservation efforts help states and others to address conservation needs of species that are approaching the need for listing as “depleted” under the MMPA, or as “threatened” or “endangered” under the ESA so that the regulatory provisions of the ESA need not be applied. Species in this category are referred to as “species of concern,” some of which are also “candidate species” that NMFS is actively considering for listing. Because the prescriptive measures of the ESA and MMPA can prove costly, proactive conservation often is more cost-effective than recovering a population once it is listed. Once a species has met the criteria for listing as “threatened” or “endangered” under the ESA, NMFS is responsible for formally listing the species and designating its critical habitat (where prudent). Recovery planning and conservation for a listed species involves management and planning to remove or minimize human impacts and provide for population increases to functional levels.

Federal Agency Consultations: ESA Section 7 requires Federal agencies, in consultation with the Secretary of Commerce and the Secretary of the Interior, to ensure that any action they fund, authorize, or undertake is not likely to jeopardize the continued existence of “threatened” or “endangered” species, or result in the destruction or adverse modification of critical habitat that has been designated for such species. In addition to conducting section 7 consultations, NMFS performs training, quality control, and guidance development. These activities allow for lawful activities such as building roads, bridges or ports to be implemented in a manner that is compatible with species conservation and recovery.

Permitting And Take Authorizations: NMFS issues permits related to direct and indirect take of listed species under sections 4(d) and 10 of the ESA and sections 101, 104, and 118 of the MMPA. An increased demand for permits has been accompanied by a need to improve the quality of National Environmental Policy Act (NEPA) analyses related to permit actions. This permitting activity applies to the general public, whereas ESA Section 7 consultations apply only to Federal activities. NMFS also works to develop Habitat Conservation Plans under the ESA with non-Federal entities requesting authorization to incidentally take listed species as part of otherwise lawful activities. Activities such as scientific research to study the ecology and biology of marine mammals, authorizing the incidental take and harassment of marine mammals and sea turtles by commercial fishing operations, seismic airguns, explosive detonations and high energy sonars are examples of activities allowed by permits and take authorizations.

Recovery Actions And Partnerships With States And Tribes: NMFS administers agreements with states and territories under section 6 of the ESA and provides Species Recovery Grants to implement conservation actions for listed species. Grants are also provided to federally recognized Tribes under the authority of the Fish and Wildlife Coordination Act. Funding supports the development and implementation of recovery strategies, scientific research, or public outreach and education activities. NMFS currently has section 6 agreements with 23 states and territories, and is working to develop additional agreements. Under the MMPA, NMFS has entered into agreements with Alaska Native groups regarding the management of harvested marine mammal stocks in Alaska; these agreements provide funding for cooperative management of these stocks.

Marine Animal Health And Stranding Response: NMFS’ Marine Animal Health and Stranding Response program coordinates response activities through marine mammal and sea turtle stranding networks, using funds from the MMPA Prescott Grant program and other sources. Funds support the rescue of stranded marine mammals and sea turtles that are entrapped in fishing gear or wash ashore due to unusual mortality events. This program also

administers the National Marine Mammal Tissue Bank, which maintains tissue samples from stranded and necropsied animals, to help with future disease diagnosis and response. It also maintains databases for tracking marine mammal stranding response and health assessment activities. Information on the causes of marine mammal strandings is useful to the public because marine mammals can serve as an indicator of ocean health, giving insight into larger environmental issues which may also have implications for human health and welfare.

Fishery Interactions And Other Sources Of Incidental Take: NMFS works collaboratively with the fishing industry and other stakeholders to identify measures to reduce the impact of commercial and recreational fisheries on protected species. Efforts include management and assessment of the NMFS Tuna/Dolphin program (a legally binding instrument for dolphin conservation and ecosystem management in the eastern tropical Pacific Ocean), MMPA fishery registration and authorization of negligible incidental take, MMPA take reduction plan development and implementation, and take reduction of salmon, sea lions, whales and sea turtles in Federal and State fisheries. NMFS also works with Federal and State partners to reduce the incidental mortality of outmigrating salmonids by hydroelectric dam operations.

Assessments: NMFS uses surveys and other information to develop status of stocks assessments in the short term. Over the long term NMFS uses time series of those assessments and predictive statistical modeling methods to forecast protected species population trends in the context of conservation actions and natural environmental factors. NMFS is responsible for completing timely assessments of all marine mammals annually and of ESA-listed species every five years. The status of stock assessments, analyses of population trends over time, and assessments of human-induced mortality and serious injury provide the biological basis for management actions to effectively recover and conserve protected species and minimize the impacts of human activities. Assessments inform management on the status of protected species populations, sources and levels of human-induced mortality and serious injury, and the effects of regulatory actions (e.g., seasonal area closures, bycatch reduction measures, and ocean noise reduction) designed to mitigate harm and improve the status of protected species.

Research: NMFS conducts research to address management actions focusing on specific questions concerning the effects of human activities on protected species and the resources on which they depend. These research programs expand and implement novel research and analyses to: 1) identify and quantify the effects of anthropogenic and natural factors on protected species populations and the variability of these effects over time and space; 2) identify and evaluate various science-based management tools such as fishing gear modifications and passive acoustic monitoring devices that can be used to recover and conserve protected species; and 3) conduct ecosystem and habitat research on issues such as environmental change, food requirements, and habitat requirements that can be used to support an ecosystem approach to protected species management.

The major FY 2010 Protected Species Research and Management program accomplishments include publishing ESA listing determinations for several species of coastal and marine fish, black abalone and Arctic ringed seals; providing expert technical advice and assistance to implement and evaluate the restoration of water flows in the San Joaquin River to restore habitat for listed species eliminated decades ago; and implementing observer requirements in state fisheries on the East and Gulf coasts to determine and monitor incidental take of marine turtles. In the North Pacific NMFS proposed designating habitat critical to the survival of the

endangered Cook Inlet beluga whale, and completed incidental harassment authorizations for exploratory drilling in the Arctic supporting the Administration's energy initiative.

The Protected Species Research and Management program works closely with the Pacific Coastal Salmon Recovery Fund program in identifying Pacific salmon critical needs and establishing long-term recovery objectives for listed Pacific salmon and steelhead species. The program also works closely with the Fisheries Research and Management, Enforcement and Observers/Training, and Habitat Restoration and Conservation programs by identifying technologies to reduce protected species bycatch, placing observers in fisheries vessels to eliminate the take of protected species, and incorporating protected species critical habitat criteria in decisions to fund habitat restoration projects.

Schedule & Milestones:

- Solicit and review Species Recovery Grant proposals submitted by states and tribes for conservation and recovery activities.
- Develop additional section 6 agreements with states and territories.
- Prepare final recovery plans and designate critical habitat.
- Provide technical assistance, consultation and authorization services for all Federal Agencies' proposed actions (ESA Section 7).
- Continue development and implementation of 10 Take Reduction Teams to achieve MMPA goals through increased compliance monitoring and bycatch assessments.
- Evaluate effectiveness and recommend enforcement measures, modify existing regulations, and add protective measures to reduce marine mammal bycatch in fisheries.
- Review listing petitions and issue 90 day findings.
- Conduct ESA status review and issue 12-month findings.
- Respond to marine animal strandings and unusual mortality events.
- Update the National Marine Mammal Tissue Bank and Marine Mammal Health and Stranding Response databases.
- Solicit and review Prescott grant proposals submitted by stranding networks for marine animal stranding activities.
- Participate in international and regional agreements to further the U.S. policy on protected species conservation.
- Conduct protected species stock assessments.

Deliverables/Outputs:

- Implement recovery actions identified in recovery plans to prevent species extinction.
- Develop comprehensive strategies for assessing the effectiveness of each take reduction plan.
- Develop or improve abundance and fishery mortality estimates for strategic stocks in Alaska, Pacific Islands, and Gulf of Mexico to inform management decisions.
- Convene new Take Reduction Teams to reduce bycatch of stocks in fisheries that meet MMPA requirements.
- Prepare formal and informal consultation to other Federal agencies.
- Provide protections to species that are listed after the completion of status reviews.

Performance Goals and Measurement Data

	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Performance Measure: Number of Protected Species Designated as Threatened, Endangered or Depleted with Stable or Increasing Population Levels (17d)	28	30	29	29	29	32
Percent of Protected Species with Adequate Population Assessments and Forecasts	18.6%	21.9%	23.7%	24.7%	25.0%	24.5%
Description: This is a component of the NMFS GPRA Measure: Percentage of Living Marine Resources (LMR) with Adequate Population Assessments and Forecasts – protected species only.						

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FY 2012 PROGRAM CHANGES:

Protected Species Research and Management Base: Protected Resources Stock Assessments (Base Funding: 174 FTE and \$41,128,000; Program Change: +2 FTE and +\$2,500,000): NOAA requests an increase of \$2,500,000 and 2 FTE for a total of \$43,628,000 and 176 FTE to conduct protected species stock assessments at a frequency required to adequately support effective conservation decision making.

Proposed Actions:

Funding will support ship and aircraft time (NOAA or charter) for assessments of 15 stocks in the Arctic (harbor porpoise, and minke, beaked, and northern Pacific right whales) and the Western Pacific (marine turtles, sperm, blue, false killer, and sei whales) to help determine the impact of human activities. Planned human activities that will increase protected species harassment, injury, and mortality include: 1) expansion of areas allowed for oil and gas exploration in the Arctic; 2) defense readiness training and operations in the Arctic and Western Pacific; and 3) commercial fishing activities in Alaska and Western Pacific.

Stock assessments of marine mammals and turtles provide a wide range of information for use by managers to conserve these species and accurately assess the effects of proposed activities on them. They include a stock's geographic range, population trends, maximum net productivity rates, potential biological removal level (how much mortality the stock can tolerate and still exist at a sustainable level or, in the case of an ESA-listed species to survive and recover), status of the stock, and estimates of annual human-caused mortality and serious injury. Information from stock assessments is used by managers to identify human-caused threats and their severity on protected species. This "effects analysis" is the basis of Endangered Species Act (ESA) biological opinions and NEPA environmental impact analyses that inform NOAA's decisions whether to authorize the "taking" of marine mammals or turtles incidental to human activities. Such take may be prohibited, or mitigated with the design and conduct of specific conservation measures. Finally, NOAA uses its stock assessment and monitoring information to evaluate the effectiveness of fisheries in reducing incidental mortality and serious injury to biologically insignificant levels. Adequate stock assessments will enable NOAA to develop more specific and less restrictive consultation responses to fishery management plans allowing for increased number of fishing days, incidental takes and the geographical area in which fishing can occur.

Statement of Need and Economic Benefits:

The Marine Mammal Protection Act (MMPA) and ESA require NOAA to regularly conduct stock assessments on protected species. The NMFS 2004 Stock Assessment Improvement Plan determined the level of assessment necessary to adequately inform management decision making. A protected species stock assessment consists of collecting, analyzing, and reporting information related to the status of protected species and the impacts of human activities such as commercial fisheries, commercial shipping transit, defense readiness training, and energy exploration and development activities on protected species. The most basic measure of a species' status is an estimate of abundance. A series of such estimates allows an evaluation of the species' trend. Other information critical to assessing the impacts of human activities are population information and an understanding of the nature and scope of human activity, the likelihood a species will encounter it and the impact it will have on the species.

In FY 2009, NOAA managed 293 protected species stocks, of which only 74, or 25%, had adequate assessments for management. The remaining 219 stocks had inadequate information because they either had poor quality abundance estimates, the assessment frequency was greater than five years, or the stock identification was not known. In FY 2010, the number of

protected species stocks managed by NOAA increased by 80 to 373 stocks due to information that led scientists to further split stocks. The splitting of stocks required NOAA to adjust its stock assessment schedule, and decreased its adequate stock assessment target for FY 2010 to 20 percent. Further declines in adequate stock assessments are projected for out years due to increased costs of field operations yielding less available time on NOAA ships and aircrafts.

Adequate stock assessments for marine mammals and turtles will help ensure that NOAA managers are requiring appropriate conservation measures for the range of proposed marine-based economic and national defense related activities that might affect protected species, while authorizing such activities to occur in a manner compatible with species conservation and recovery. This will lead to improved management of conflicts between humans and protected species. It will also decrease NOAA's susceptibility to lawsuits under the MMPA and ESA because NOAA's actions will be based on sound science.

A lack of adequate stock assessments will force NOAA to take economically restrictive regulatory actions to protect vulnerable stocks in the face of limited, outdated or no information. A precautionary approach could result in economic losses, particularly to the commercial fishing industry through temporary or permanent closures, gear size restrictions, or lowered catch limits or quotas. These losses could drive an increased number of lawsuits against NOAA. Legal action would take discretion away from NOAA in determining resource allocations and actions because NOAA would have to respond to court orders, as opposed to making its own determinations as to where resources need to be used. Finally, lacking adequate stock information, NOAA may not down-list or de-list a species, and continue directing conservation resources to a given species when they are no longer needed by that species. This operational restraint will prevent NOAA from dealing effectively with additional species that are listed.

Due to inadequate stock assessments of marine mammals and turtles in the Gulf of Mexico, analyzing and responding to ecological and species level impacts from the Deep Water Horizon Oil Spill (DWHS) has been difficult. Disasters such as the DWHS can happen in other areas such as the Arctic, where oil and gas exploration activities are expanding. Therefore, having current and active information on protected species is necessary to initiate timely response and habitat restoration activities when an oil spill or other disasters occur.

Also, the July 2010 National Academies of Sciences National Resources Council (NRC) report has recommended improved sea turtle abundance estimates via stock assessments and surveys with associated demographic data to help accurately assess sea turtle population and listing status, as they feel current data needs are not being met.

Base Resource Assessment: The base resources for this activity are described in the Protected Species Research and Management program base narrative.

Schedule and Milestones:

	FY12	FY13	FY14	FY15	FY16
Conduct Abundance surveys in the Arctic and Western Pacific to collect population data on marine mammal and turtles	X	X	X	X	X
Analyze the population data collected	X	X	X	X	X
Formulate conclusions and recommendations		X	X	X	X
Update Arctic and Western Pacific stock assessment reports to reflect current environmental conditions			X	X	X

Deliverables:

- Increase the number of marine mammal and turtles stocks with adequate population assessments and forecasts.
- Final stock assessment report for an additional fifteen stocks.
- Develop methodologies to mitigate interactions between commercial fisheries and protected species.

Performance Goals and Measurement Data

Performance Measure:	FY	FY	FY	FY	FY	FY
Percentage of Protected Species stocks with adequate population assessments and forecasts	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Increase	18.6%	21.9%	23.7%	26.0%	27.6%	28.3%
Without Increase	18.6%	21.9%	23.7%	24.7%	25.0%	24.5%

Description: This is a component of the NMFS GPRA Measure: Percentage of Living Marine Resources (LMR) with Adequate Population Assessments and Forecasts – protected species only.

Performance Measure:	FY	FY	FY	FY	FY	FY
Number of Arctic stocks with adequate population assessments and forecasts	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Increase	2	2	2	4	7	9
Without Increase	2	2	2	2	2	2

Description: This measure accounts for the number of Arctic protected species stocks which have adequate population assessments and forecasts. The numbers reported in this measure are accounted for in the sub-GPRA measure “Percent of protected species stocks with adequate population assessments and forecasts.” Successful stock, population and species assessments provide NOAA managers with the information on the status and trends of species, which is fundamental to assess the impacts of proposed activities which may affect them.

Performance Measure:	FY	FY	FY	FY	FY	FY
Number of Western Pacific stocks with adequate population assessments and forecasts	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Increase	0	0	0	3	5	8
Without Increase	0	0	0	0	0	0

Description: This measure accounts for the number of Western Pacific protected species stocks that have adequate population assessments and forecasts. The numbers reported in this measure area accounted for in the sub-GPRA measure “Percent of protected species stocks with adequate population assessments and forecasts.” Successful stock, population and species assessments provide NOAA managers with the information on the status and trends of species, which is fundamental to assess the impacts of proposed activities which may affect them.

PROGRAM CHANGE PERSONNEL DETAIL

Activity: National Marine Fisheries Service
 Subactivity: Protected Species Research and Management

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Fishery Biologist	Honolulu, HI	ZP-3	1	55,824	55,824
Fishery Biologist	Honolulu, HI	ZP-4	1	79,565	79,565
Fishery Biologist	Anchorage, AK	ZP-3	1	58,564	58,564
Total			<u>3</u>		<u>193,953</u>
less Lapse		25%	<u>1</u>		<u>48,488</u>
Total full-time permanent (FTE)			2		145,465
2011 Pay Adjustment (0%)					0
2012 Pay Adjustment (0%)					0
TOTAL					<u>145,465</u>

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	2
Other than full-time permanent	<u>0</u>
Total	2
Authorized Positions:	
Full-time permanent	3
Other than full-time permanent	<u>0</u>
Total	3

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Marine Fisheries Service
Subactivity: Protected Species Research and Management

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$145
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	145
12 Civilian personnel benefits	43
13 Benefits for former personnel	0
21 Travel and transportation of persons	6
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	2,000
24 Printing and reproduction	0
25.1 Advisory and assistance services	300
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	6
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	2,500

Protected Species Research and Management Base: Consultations and Authorizations (Base Funding: 174 FTE and \$41,128,000; Program Change: +7 FTE and +\$3,000,000):

NOAA requests \$3,000,000 and 7 FTE for a total of 181 FTE and \$44,128,000 to increase its capacity to meet its interagency consultation and authorization workload for regional energy development, national security–related activities, pelagic longline fishery operations, and operations of the Pacific Marine National Monuments. Funding will also support NOAA’s effort to improve its on-time completion rate and reduce the backlog of consultation that have received no action.

Proposed Actions

With these additional resources NOAA will meet emerging requirements for Endangered Species Act (ESA) interagency technical assistance and authorizations under the Marine Mammal Protection Act (MMPA) and ESA for all proposed actions within the Arctic, the Northeast, and Western Pacific for energy exploration and development, national defense–related activities, and fishery operations in protected areas. NOAA will conduct ESA Section 7 consultations with and provide authorizations to the Bureau of Ocean Energy Management, Regulation and Enforcement; Federal Energy Regulatory Commission; and the U.S. Army Corps of Engineers by assessing the effects on protected resources of planned increased exploration, development, and production of conventional and alternative energy projects in the Pacific and Arctic. NOAA will also provide assistance in project siting and operation of 75 alternative projects of wave, current, and wind energy in the Northeast and Western United States.

NOAA will conduct consultations with and provide authorizations to the U.S. Navy assessing the effects on protected resources of the relocation of its operations from Okinawa, Japan to Guam; the effects of day-to-day operations of its installations; and its expanded operations and training activities throughout the Western Pacific. NOAA will conduct consultations within the agency and with other federal agencies and the U.S. Navy to assess the effects of increased vessel transit on protected resources (noise and collision) in an Arctic environment subject to reduced sea ice. Within NMFS, the Protected Species Program will conduct consultations with the Fisheries Management Program to assess the effects on ESA-listed species of pelagic fishery longline operations in the Northern Marianas Islands and with NOAA’s National Ocean Service on its operations in the newly designated Pacific Marine National Monuments (Marianas Trench, Pacific Remote Islands, and Rose Atoll).

Statement of Need and Economic Benefits

Over the past five years, NOAA has experienced a 16 percent decline in on-time processing of MMPA and ESA permits. In FY 2010, approximately 70 percent of formal ESA consultations received no action within statutory deadlines due to the increased number of listed species and complex consultations. The number of consultations is expected to increase in FY 2012 and beyond because of new species listings; in 2010 four species were added to the endangered species list, and many more might be added in 2011 due to the large number of species that have been petitioned and are now proposed and candidates for listing. The anticipated increase in consultations is also being driven by the Pacific Remote Islands and Papahānaumokuākea Marine National Monuments, increased vessel traffic in the Arctic environment, development of conventional and alternative energy projects, and national security. The authorization of lawful activities that may affect protected species is critical to ensure economic development and national defense actions are compatible with species conservation and recovery.

Base Resource Assessment: The base resources for this activity are described in the Protected Species Research and Management program base narrative.

Schedule and Milestones:

- Provide technical assistance, consultation and authorization services for all proposed actions within the Arctic and Western Pacific for energy exploration and development and national defense related activities.

Deliverables:

- Complete formal and informal Section 7 consultations.
- Complete Biological Opinions.
- Reduce the impact of energy exploration and development projects and national defense activities on protected species mortality, injury, and harm through interagency advice and consultation.

Performance Goals and Measurement Data

Performance Goal:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Number of additional section 7 consultations prepared for Arctic and Western Pacific activities	Target	Target	Target	Target	Target	Target
With Increase	26	46	64	103	103	103
Without Increase	26	26	26	26	26	26
Description: This measure tracks the number of section 7 consultations completed on proposed federal activities occurring in the Arctic and Western Pacific. Arctic is defined as the Aleutian Islands north through the Bering to the Chukchi and Beaufort Seas, consistent with NOAA’s Arctic Action Plan (http://www.wfm.noaa.gov/pdfs/NLS_Jul09/Barnum.pdf), and the Western Pacific is the same area managed by the Western Pacific Regional Fishery Management Council (http://www.wpcouncil.org). Successful interagency ESA Section 7 consultations allows federally permitted or authorized activities (energy exploration and development, ship transit, coastal facility development and operations, defense readiness activities) to take place in a manner compatible with species recovery.						

Performance Goal:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Percent of consultations (both Formal and informal) completed on time.	Target	Target	Target	Target	Target	Target
With Increase	44.5%	47.6%	48.9%	51.8%	51.8%	51.8%
Without Increase	44.5%	44.5%	44.5%	44.5%	44.5%	44.5%
Description: This measure tracks percent of section 7 consultations (formal and informal) completed within statutory deadlines.						

PROGRAM CHANGE PERSONNEL DETAIL

Activity: National Marine Fisheries Service
 Subactivity: Protected Species Research and Management

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Fisheries Biologist	Seattle, WA	ZP-3	1	61,225	61,225
Fisheries Biologist	Gloucester, MA	ZP-3	1	62,758	62,758
Fisheries Biologist	Juneau, AK	ZP-3	2	58,564	117,128
Fisheries Biologist	Honolulu, HI	ZP-3	2	55,824	111,648
Fisheries Biologist	Long Beach, CA	ZP-3	1	63,945	63,945
Fisheries Biologist	St. Petersburg, FL	ZP-3	1	57,408	57,408
Fisheries Biologist	Silver Spring, MD	ZP-4	1	89,033	89,033
Total			<u>9</u>		<u>563,145</u>
less Lapse		25%	<u>2</u>		<u>140,786</u>
Total full-time permanent (FTE)			<u>7</u>		<u>422,359</u>
2011 Pay Adjustment (0%)					0
2012 Pay Adjustment (0%)					0
TOTAL					<u>422,359</u>

Personnel Data	Number
Full-Time Equivalent Employment	
Full-time permanent	7
Other than full-time permanent	0
Total	<u>7</u>

Authorized Positions:

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Marine Fisheries Service
Subactivity: Protected Species Research and Management

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$422
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	422
12 Civilian personnel benefits	127
13 Benefits for former personnel	0
21 Travel and transportation of persons	49
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	35
24 Printing and reproduction	10
25.1 Advisory and assistance services	1,563
25.2 Other services	773
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	21
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	3,000

Species Recovery Grants (Base Funding: 9 FTE and \$15,817,000; Program Change: +0 FTE and +\$8,000,000): NOAA requests an increase of \$8,000,000 and 0 FTEs for a total of 9 FTEs and \$23,817,000 for the conservation and recovery of marine and anadromous species under NMFS's jurisdiction and listed under the Endangered Species Act (ESA) through the Species Recovery Grants Program.

Proposed Actions

Recovery and conservation efforts for ESA-listed species under NMFS's jurisdiction are largely implemented through Species Recovery Grants, which are awarded under the authority of section 6 of the ESA and the Fish and Wildlife Coordination Act. This increase will provide additional grants to states and tribes to conduct priority recovery actions for listed species. Priority recovery actions can include restoring habitat necessary for the recovery of listed species, assessing and monitoring species status and trends, partnering with others to conduct cross-jurisdictional conservation actions, developing conservation plans to mitigate incidental take of listed species, and educating the public about the conservation of ESA-listed species. Grants may also support needed monitoring of candidate and recently de-listed species. Listed Pacific salmonids are not addressed through this program and instead may be supported through the Pacific Coastal Salmon Recovery Fund. NMFS will track ongoing and completed recovery actions by incorporating NMFS information into the U.S. Fish and Wildlife Service's "Recovery Online Activity Reporting System" or an equivalent tracking system. NMFS will also develop a database to track and evaluate the effectiveness of funded projects and provide searchable information for the public.

Statement of Need and Economic Benefits

NMFS currently has jurisdiction over 72 threatened or endangered species, 17 species that have been proposed for listing, and 88 candidates for listing under the ESA. In 2010, four species were added to the endangered species list, and many more might be added in 2011 due to the large number of species that have been petitioned and are now proposed and candidates for listing. The addition of species to these lists without corresponding investments in, and implementation of, recovery and conservation actions results in increasing pressure on all ESA programs within NMFS and an increasing regulatory burden on the public.

The Species Recovery Grants Program envisions that states, tribes, and other entities partner with the Federal government in the conservation of listed species. NMFS has funded these grants to states since 2003 and currently has ESA section 6 cooperative agreements with 23 states and territories (AL, AK, CA, CNMI, DE, FL, GA, HI, LA, ME, MD, MA, MS, NJ, NY, NC, OR, PR, SC, TX, USVI, VA, WA); such agreements are required under section 6 of the ESA in order for states and U.S. territories to receive this funding. Beginning in fiscal year 2010, NMFS initiated a similar grant program for federally recognized tribes. Increased funding for Species Recovery Grants will allow the program to more fully address the recovery needs of listed and candidate species in states, territories, and on tribal lands. Federal funding, provided in the form of grants, will be awarded annually through a competitive, merit-review based process that responds to national conservation and recovery priorities established by NMFS in cooperation with partner states and tribes.

Recovery of listed species is dependent on collaboration and cooperation with various partners. However, most of these entities do not have adequate resources to address even the most critical recovery actions, and Federal assistance is necessary to ensure their ability to engage in effective conservation programs and partnerships. By partnering with states and tribes, the Federal government can also leverage resources from these entities by including matching

requirements in grant solicitations. For example, the Species Recovery Grants to States Program leverages additional funding in support of species recovery: section 6 of the ESA requires a 25 percent match of federal funding, or a 10 percent match when two or more states partner on a project. Matching funds offer additional financial resources that NMFS would not need to spend on recovery, thus allowing for larger or more complex conservation and habitat restoration projects. This request would strategically leverage state and tribal funds and coordinate the prioritization of protected species recovery actions.

Through leveraging the financial, technical, and educational resources from states, territories and tribes, NMFS can achieve a greater level of conservation of listed species. Fostering relationships with states, territories and tribes through cooperative conservation, and the Species Recovery Grants Program in particular, allows utilization of local expertise and is an effective approach to protecting and recovering listed species. Closely involving states and tribes in the recovery of listed species also increases support for NMFS's regulatory actions, as states and tribes can aid NMFS in understanding the most effective means of reducing and eliminating threats to species.

Base Resource Assessment:

The base resources for this activity are described in the Protect Species Research and Management base narrative.

Schedule and Milestones:

- Solicit and review Species Recovery Grant proposals submitted by states and tribes for conservation and recovery activities.
- Develop additional section 6 agreements with states and territories.
- Update the U.S. Fish and Wildlife Service Recovery Online Activity Reporting System.
- Develop and begin populating a Species Recovery Grants Tracking Database.

Deliverables:

- Implement recovery actions identified in recovery plans to prevent species extinction.
- Modified Recovery Online Activity Reporting System.
- A Species Recovery Grants Tracking Database.

Performance Goals and Measurement Data

Performance Goal: Number of priority recovery actions being addressed through Species Recovery Grants	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	40	50	60	60	65	65
Without Increase	40	40	50	50	55	55

Note that under level funding, changes to the performance measure will occur in FY 2013 as large multi-year awards initiated in FY 2010 expire. NMFS anticipates that this increase can benefit ESA-listed sturgeon, sea turtles, abalone, corals, sawfish, large whales and other listed marine mammals including Hawaiian monk seals and southern resident killer whales.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Marine Fisheries Service
Subactivity: Protected Species Research and Management

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	8,000
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	8,000

Marine Mammals (Base Funding: 163 FTE and \$50,728,000; Program Change: 0 FTE and -\$2,302,000): NOAA requests a decrease of \$2,302,000 and 0 FTE for Marine Mammals for a total of 163 FTE and \$48,426,000. In the Consolidated Appropriations Act, 2010, Congress provided additional funds for protection activities related to Hawaiian monk seals and Pacific Island cetaceans. With these additional funds, NOAA conducted Hawaiian monk seal health and disease investigations and foraging ecology projects, as well as stock assessments for marine mammals in the Pacific Islands. In FY 2012, the President's Budget will build upon the knowledge gained from these projects, but does not need additional funds, as the projects have been completed. The FY 2012 President's Budget provides funding to carry on marine mammal activities such as implementing take reduction plans to reduce bycatch; responding to marine mammal strandings; conducting marine mammal stock assessments and scientific research; and establishing cooperative agreements with Alaska Native groups to manage the harvesting of marine mammals in Alaska. These activities, in turn, will enable the effective conservation and protection of marine mammals by NOAA. In addition, the FY 2012 President's Budget increases funding for several activities that will directly benefit marine mammals, including stock assessments, consultations and authorizations, and Species Recovery Grants.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Marine Fisheries Service
Subactivity: Protected Species Research and Management

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	-683
24 Printing and reproduction	0
25.1 Advisory and assistance services	-1,619
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	-2,302

Marine Turtles (Base Funding: 55 FTE and \$14,927,000; Program Change: 0 FTE and \$4,348,000): NOAA requests a decrease of \$4,348,000 and 0 FTE for Marine Turtles for a total of 55 FTE and \$10,579,000. In the Consolidated Appropriations Act, 2010, Congress provided additional funds for protection activities related to Hawaiian sea turtles. With these additional funds NOAA implemented cooperative conservation actions with Hawaii and the Commonwealth of the Northern Mariana Islands; engaged in conservation capacity building activities with international partners; and conducted Hawaiian sea turtle ecological and behavioral research projects. In FY 2012, the President's Budget will build upon the knowledge gained from these projects, but does not need additional funds, as they are completed. The FY 2012 President's Budget provides funding to carry on marine turtle activities such as providing interagency consultation and technical assistance on marine turtle bycatch reduction strategies; implementing recovery actions and cooperative conservation actions with States, Territories and Commonwealth; conducting marine turtles stock assessments and scientific research; and undertaking fishery ecology and interaction projects. These activities, in turn, will enable the effective conservation and protection of marine turtles by NOAA. In addition, the FY 2012 President's Budget increases funding for several activities that will directly benefit marine turtles, including stock assessments, consultations and authorizations, and Species Recovery Grants.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Marine Fisheries Service
Subactivity: Protected Species Research and Management

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	-2,174
25.2 Other services	-2,174
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>-4,348</u>

Atlantic Salmon (Base Funding: 27 FTE and \$8,602,000; Program Change: 0 FTE and - \$500,000): NOAA requests a decrease of \$500,000 and 0 FTE for Atlantic Salmon for a total of 27 FTE and \$8,102,000. Remaining funds will be used to continue implementing projects to address fish passage barriers, restore habitat, study the major threats to Atlantic Salmon, and conduct ESA consultations on Federal projects that might impact Atlantic Salmon survival. Funding will also be used to conduct estuarine and early marine survival assessments using telemetry; undertake hatchery evaluation studies; study diseases; and research the development of hydroacoustic techniques to monitor smolts and estimate abundance. These activities, in turn, will enable the effective conservation and protection of Atlantic salmon by NOAA. In addition, the FY 2012 President's Budget increases funding for several activities that will directly benefit atlantic salmon, consultations and authorizations and Species Recovery Grants.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Marine Fisheries Service
Subactivity: Protected Species Research and Management

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	-500
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	-500

Pacific Salmon (Base Funding: 356 FTE and \$66,833,000; Program Change: +0 FTE and +\$2,668,000): NOAA requests an increase of \$2,668,000 and 0 FTE for a total of 356 FTE and \$69,501,000 to monitor Pacific salmon reintroductions, evaluate the restoration effectiveness of Pacific salmon habitats, and expand NOAA's genetic stock identification capability. Pacific salmon represents a significant biological, cultural, and economic asset to the United States, especially to the Pacific Northwest. There are both direct and indirect economic benefits tied to salmon. Studies and analyses have shown these benefits ranging from hundreds of millions to billions of dollars annually derived from salmon fisheries.

Proposed Actions

Pacific Salmon Science (\$668,000): *Monitoring and Evaluation of Conservation Actions to Reintroduce Salmon and Restore Habitat* – Funding will support fish tagging and tracking technology to monitor and evaluate watershed level salmon reintroduction and habitat restoration actions. This effort will provide critical information on salmon life history and survival requirements which will lead to more effective restoration of salmon habitats by improving the focus of restoration efforts to those habitat elements that can best increase survival. This improved focus will result in increased likelihood of recovery success.

Genetic Stock Identification (GSI) (\$2,000,000): *Genetic Tools and Stock Indicators* – Funding will support: (1) at-sea sample collection of Chinook salmon tissue by fishermen; (2) genetic analysis of up to 10,000 additional Chinook salmon samples annually to provide stock origin information for salmon caught in California, Oregon, and Washington coastal fisheries; (3) expanded research on the development of additional genetic tools to reduce costs and increase efficiency of genetic analysis; (4) improved methods of fishery management and stock assessment that fully utilize the spatially explicit genetic information collected; and (5) a regional integrated data system that facilitates movement of data from fishing boats, genetics laboratories, and oceanographic sensors (which provide regional, physical, and chemical oceanographic data in real or near-realtime) into a centralized online database.

Obtaining stock specific ocean distribution and catch information is an essential component of managing mixed-stock fisheries. Currently, management of West Coast commercial Chinook and coho salmon fisheries is based primarily on recoveries of tagged hatchery releases. This methodology provides a coarse-scale picture of the temporal and spatial distribution of stocks along the West Coast. In order to effectively manage weak stocks and protect ESA-listed salmon populations, it is sometimes necessary to restrict fishing over large areas and thereby limit access to strong stocks. Inferences about wild stocks, many of which are protected under the ESA, are typically based upon data from hatchery stock recoveries which may not accurately reflect wild stock distributions. Use of new sampling technologies that provide explicit spatial and temporal catch information, combined with genetic analysis to provide stock identification of both wild and hatchery stocks, is expected to provide much greater information on the stock-specific patterns of salmon ocean distribution than is presently available. The resulting data will allow analysis of stock-specific spatial catch distributions at a scale that may provide new opportunities to manage fisheries, in-season, to target strong stocks while limiting weak-stock impacts.

Statement of Need

This increase will improve the scientific information for Pacific salmon recovery allowing managers to effectively focus efforts on the most critical actions threatening salmon. Managers will be better able to predict ocean abundance and develop improved conservation strategies, improve success of restoration projects, and understand the risks of hatchery supplementation. In turn, better management of the salmon fishery should provide greater fishing opportunities.

The Magnuson-Stevens Reauthorization Act requires implementation of annual catch limits (ACLs) for all Federally-managed fisheries. Genetic Stock Identification enables catch composition estimates for a greater number of stocks with higher resolution than existing tools. It also enables more accurate stock-specific accounting of salmon bycatch in other fisheries (e.g., whiting). These estimates can be used at several stages in the management process to improve prediction, harvest management, and catch accounting to achieve ACLs and harvest goals mandated by the ESA and international agreements.

Improved, higher-resolution fishery management techniques are expected to enable harvest managers to target fisheries on more abundant runs and reduce impacts on weak stocks. This should provide greater fishing opportunity and sustainability for recreational and commercial fleets that have been stressed by recent fishery closures. Economic benefits will accrue to the fishermen and their supporting communities.

Base Resource Assessment: The base resources for this activity are described in the Protected Species Research and Management program base narrative.

Schedule and Milestones:

- Monitor salmon recovery and conservation actions.
- Collect and genetically analyze salmon tissue.

Deliverables:

- Publish best management practices of salmon recovery and conservation actions.
- Accurate abundance estimates of salmon stocks.
- Improved salmon fishery management.
- Centralized database containing salmon genetic information.

Performance Goals and Measurements Data

Achieving stable or increasing populations of ESA-listed salmon is a long-term effort because of the time it takes to determine responses to conservation measures. The request benefits the status of salmon evolutionary significant units (ESUs) in the Northwest region, as well as the status of ESUs in Northern California.

Performance Measure:	FY	FY	FY	FY	FY	FY
Percentage of Protected Species stocks with adequate population assessments and forecasts	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Increase	18.6%	21.9%	24.2%	25.8%	26.0%	25.5%
Without Increase	18.6%	21.9%	23.7%	24.7%	25.0%	24.5%

Description: This is a component of the NMFS GPRA Measure: Percentage of Living Marine Resources (LMR) with Adequate Population Assessments and Forecasts – protected species only.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Marine Fisheries Service
Subactivity: Protected Species Research and Management

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	644
25.2 Other services	2,004
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	5
31 Equipment	15
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>2,668</u>

Pacific Salmon: CALFED Bay-Delta Program (Base Funding: 1 FTE and \$600,000; Program Change: +3 FTE and +\$1,000,000): NOAA requests an increase of 3 FTE and \$1,000,000 for a total of 4 FTE and \$1,600,000 to support its Water Operations Oversight and Coordination activities under the CALFED Bay Delta program. The CALFED Bay-Delta Program is a cooperative effort of 18 State and Federal agencies with regulatory and management responsibilities in the San Francisco Bay-Sacramento/San Joaquin River Bay-Delta to develop a long-term plan to restore ecosystem health and improve water management for beneficial uses of the Bay-Delta system.

Proposed Actions

Funding will support actions required under the new Operations Criteria and Plan (OCAP) Biological Opinion (final issued June 4, 2009) on ESA listed Chinook salmon, steelhead and green sturgeon. The funds will support the “Smarter Water Supply and Use” activities delineated in the recent Interim Federal Action Plan. Specifically, funding will support coordination of ESA compliance and permitting with the Bureau of Reclamation and the California Department of Water Resources, including ESA section 7 consultations on infrastructure projects, long-term water contracts, fish screens, temperature control structures, and fish passage above dams. Funds will also be used to monitor compliance with the new Reasonable and Prudent Alternative (RPA) in the OCAP biological opinion by enabling NOAA to participate in ongoing reviews of water operations forecasts, participate on new technical teams, and assist in adaptive management decisions regarding real time operations of the state and Federal Central Valley water projects. Some of the RPA actions require NOAA technical review of new studies and monitoring stations. These actions and NOAA’s ongoing involvement will help protect habitat and reduce mortality to ESA-listed fish species and promote recovery. The actions will also benefit Southern Resident killer whales that rely on salmon from the Central Valley as a prey resource and assist in recovering the collapsed Pacific salmon fishery.

Statement of Need and Economic Benefits

These funds are needed to support activities to implement the new OCAP Biological Opinion. Given the complexity of the project and listed species involved, NOAA will be required to provide on-going technical and scientific expertise at the local, watershed, and system-wide levels to ensure operations and other actions are implemented in a timely and technically appropriate manner. NOAA is required to provide technical review of new studies and monitoring stations, participate in review of water operations forecasts, assist in adaptive management decisions regarding real time operations of the state and Federal Central Valley water projects, and monitor compliance with the new Reasonable and Prudent Alternative in the OCAP biological opinion. The additional funding is also necessary to conduct ESA section 7 consultations on new infrastructure projects, long-term water contracts, fish screens, temperature control, and fish passage above dams, many of which have been awaiting the completion of the OCAP consultation. Benefits from NOAA’s ongoing involvement will help protect habitat and reduce mortality of ESA-listed fish species, promote recovery, and ensure consistent implementation of the RPA. In addition, the additional funding will also help staff with the anticipated section 7 consultation workload resulting from the new projects pursuant to the OCAP biological opinion, which will benefit listed species and their habitats, and help project proponents expedite their projects.

Base Resource Assessment: The base resources for this activity are described in the Protected Species Research and Management program base narrative.

Schedule and Milestones:

- Monitor compliance of the reasonable and prudent alternatives in the OCAP biological opinion.
- Participate in ongoing reviews of water operations forecasts and technical teams

Deliverables:

- Incidental Harassment Authorizations and Section 7 consultations for Federal agencies who are conducting projects in the California Central Valley.
- Protect habitat and reduce mortality of ESA-listed fish species.

Performance Goals and Measurement Data

Performance Goal:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
OCAP-related section 7 formal consultations receiving early technical assistance	Target	Target	Target	Target	Target	Target
With Increase	0	2	4	6	6	6
Without Increase	0	0	0	0	0	0
Description: Early technical assistance is expected to result in complete initiation packages upon request for formal consultation, and therefore, streamline the formal consultation process.						

Performance Goal:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
No. of technical teams fully staffed	Target	Target	Target	Target	Target	Target
With Increase	4	6	8	10	10	10
Without Increase	4	4	4	4	4	4
Description: Technical teams include the seven specified in the NMFS OCAP Opinion, one in the U.S. Fish and Wildlife Service’s OCAP Opinion, and ongoing CALFED/Delta Stewardship Council teams. The technical teams provide technical and scientific expertise at the local, watershed, and system-wide levels to ensure operations and other actions are implemented in a timely and technically appropriate manner.						

PROGRAM CHANGE PERSONNEL DETAIL

Activity: National Marine Fisheries Service
 Subactivity: Protected Species Research and Management

Title:	Location	Grade of Positions	Number	Annual Salary	Total Salaries
Fisheries Biologist	Long Beach, CA	ZP-3	4	63,945	255,780
Total			<u>4</u>		<u>255,780</u>
less Lapse		25%	<u>1</u>	<u>63,945</u>	
Total full-time permanent (FTE)			3		191,835
2011 Pay Adjustment (0%)					0
2012 Pay Adjustment 0%					<u>0</u>
TOTAL					<u>191,835</u>

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	3
Other than full-time permanent	<u>0</u>
Total	3

Authorized Positions:

Full-time permanent	4
Other than full-time permanent	<u>0</u>
Total	4

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Marine Fisheries Service
Subactivity: Protected Species Research and Management

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$192
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>192</u>
12 Civilian personnel benefits	58
13 Benefits for former personnel	0
21 Travel and transportation of persons	34
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	3
25.2 Other services	704
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	9
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>1,000</u>

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APPROPRIATION: OPERATIONS, RESEARCH AND FACILITIES

SUBACTIVITY: FISHERIES RESEARCH AND MANAGEMENT

The Fisheries Research and Management budget line base funding encompasses many of the scientific activities that enable NMFS to be effective stewards of living marine resources, using an ecosystem-based approach to science and management, for the benefit of the Nation.

Managing the Nation's marine fisheries at sustainable harvest rates and rebuilding depleted fish stocks requires the best available scientific information to implement sound management and conservation actions. NMFS' science quality assurance activities and a rigorous peer review program ensure that management decisions are based on the highest-quality scientific information on the biological, social, and economic status of the fisheries. This includes species' responses to environmental changes, species interactions, exploitation, and other human activities that affect species and their habitat. Social, cultural, and economic behaviors and incentives that influence interactions between humans and marine fisheries are also addressed.

The goal is to provide accurate and timely information and analyses on the biological, ecological, economic and social aspects of the Nation's fisheries resources. This in turn provides the scientific knowledge base for NMFS' Regional Offices, fishery management councils, interstate fishery commissions, and other agencies to facilitate informed marine resource management decisions for sustainable fisheries, aquaculture, protected resources, endangered species and habitat.

Fisheries Research And Management Programs: Under the authority of the Magnuson-Stevens Act (MSA), and other fisheries legislation, the Fisheries Research and Management Program budget line supports activities and staff working on eliminating overfishing and rebuilding overfished stocks. This is essential to ensuring biological sustainability and to increasing long-term economic and social sustainability of fisheries. The funds are used to coordinate with other NOAA programs to deliver products and services, including basic and applied science for the analysis and decision-making that support ecosystem approaches to fisheries management and enforcement to ensure compliance with regulations. Working within the legislative structure, the line funds international agreements, education and outreach, and the development of fisheries regulations and Fisheries Management Plans and amendments in order to maintain and restore productive stocks important to commercial, recreational, tribal, and subsistence fisheries. Major components of this line include:

- *Annual Catch Limits (ACLs) and Accountability Measures (AMs), Peer Reviews, and Stipends:* Overfishing has a detrimental impact on the ecological and economic sustainability of fisheries, negatively affecting fishing communities, industry and recreational interests and other marine resources. MSA requires that ACLs and AMs be implemented in all fisheries by 2011 such that overfishing does not occur. For fisheries where overfishing is currently occurring, ACLs and AMs must be implemented by the end of 2010. The Councils use the funds to develop amendments to their Fishery Management Plans (FMPs) that implement ACLs and AMs. The six NMFS Regions and the Atlantic Highly Migratory Species Division establish and monitor ACLs and AMs, process and analyze catch data, and to report annual data for national performance monitoring. Analysis of this data will determine management action and lead to the development or improvement of ACL management systems.
- *International Requirements of the Magnuson-Stevens Reauthorization Act:* This supports the international requirements of the MSA. This includes participation and leadership for

international obligations under the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean as mandated by the reauthorized MSRA. It also allows NOAA to provide leadership for the U.S. delegation to the Western and Central Pacific Fisheries Commission (WCPFC). The WCPFC is responsible for the conservation and management of highly migratory fish stocks in the Western and Central Pacific Ocean.

NMFS publishes a biannual report identifying nations whose vessels are engaging in Illegal, Unreported, Unregulated (IUU) fishing. The identification of these nations opens the way for continued consultations between the U.S. Government and officials of these nations to take corrective action to stop IUU fishing. NMFS activities include bycatch identification, consultation and certification procedures, and collection of data to support the identification, consultation and certification actions with IUU/bycatch nations and governing Regional Fishery Management Organizations. In the event that any nation fails to take MSA-required actions, the Department of Commerce, working through NOAA and in coordination with State Department, the U.S. Trade Representative, and other agencies, is required to take remedial steps. Such actions could lead to the eventual implementation of fishery-product trade prohibitions.

- *Recreational Fisheries Information:* Under MSA, NOAA established and implemented a regionally-based registry program for recreational fishermen and for-hire fishing vessels and developed an improved recreational fisheries statistics program that uses the new regional registries and incorporates more complete and reliable data, to the maximum extent feasible. Along with funds in Fisheries Statistics, this base funding is used to support the Marine Recreational Information Program's work to improve and expand NMFS' data collection efforts for monitoring recreational fisheries impacts. This is contributing significantly to improving relations with the recreational fishing community and improving federal fisheries management.
- *Regulatory Streamlining Program:* The implementation of the Regulatory Streamlining Program (RSP) improves the quality and timeliness of regulatory processes and policy development for its Fishery Management Program through comprehensive impact analyses, full and timely consideration of all relevant issues, and compliance with all applicable laws and procedures. RSP enables NOAA to efficiently address policy issues with the Regional Fishery Management Councils early in the regulatory process, rather than later when it becomes difficult to comprehensively address a new and possibly contentious issue.

All eight Regional Fishery Management Councils and six NMFS regions receive support to frontload development, analysis, evaluation, and implementation of fishery management actions. Deliverables include fishery management plans, plan amendments, implementation regulations (proposed and final rules), annual harvest specifications, and in-season management actions. NOAA assists in the development, review, and implementation of Council-proposed actions. Staff is used to assist Councils efforts to facilitate and expedite Secretarial approval and implementation of Fishery Management Plans and amendments, and to prepare analytical documents in support of rulemaking.

- *Marine National Monuments:* Funds are used to sustainably manage three Marine National Monuments (MNM) in the Pacific Ocean. These Monuments encompass nearly 200,000 square miles, and together represent the largest marine reserve in the world. This requires that NOAA conduct fisheries and living marine ecosystem

observation and monitoring, develop a management plan and monument advisory council, conserve Essential Fish Habitat designations, and consult on protected species.

- *Pelagic Fisheries Research*: NOAA collaborates with academic and research institutions that provide resources and opportunities relevant to NOAA's mission, but generally extend beyond the agency's own capacities. Projects under this program are determined via a competitive proposal process. Examples of previously funded projects include: research to improve the assessments of tuna and billfish populations in the Pacific; studies on the biology and ecology of sea turtles, seabirds, sharks and other non-target key open ocean ecosystem inhabitants that interact with or are incidentally taken in these fisheries; research on essential habitat for open ocean animals; and studies on fisheries economics and socio-cultural profiles of the Pacific Islands region fishing communities.
- *West Coast Groundfish Management and Research*: The West Coast groundfish program provides the key science support needed for management of over 80 fish stocks along the coasts of Washington, Oregon, and California. The full-service program conducts resource surveys to track trends in fish abundance; manages the coastwide observer program; conducts needed biological studies on fish habitat, bycatch, and other pertinent issues; and prepares stock assessments that provide the information needed to track rebuilding of seven overfished stocks and to guide sustainable catch levels for all stocks.
- *Atlantic Bluefin Tuna Observer Coverage*: Funds support observer coverage of the pelagic longline fishery in the Gulf of Mexico where Atlantic bluefin tuna (ABFT) are incidentally caught. ABFT is an extremely valuable and severely overfished stock, and while a rebuilding plan has been in place since 1999, management measures have not yet resulted in rebuilding the stock. Observers have been trained in documenting ABFT bycatch, collecting and preserving biological samples, and evaluating the performance of commercial and experimental fishing gear in reducing ABFT bycatch.
- *Regional Science and Operations*: These funds are used to support core survey and stock assessment activities in Alaska. These activities include groundfish survey and stock assessment personnel, as well as groundfish age and growth program, charters for survey vessels, fuel, supplies and gear. All of these basic components provide information on current Alaskan groundfish stock status for use by NMFS and the North Pacific Fisheries Management Council in determining annual catch quotas. Funds are used internally and for competitive contracts in the case of charter survey vessels. Funds are also used to support implementation of fishery management plans (FMP), amendments, and regulations for managing the commercial fisheries in the Exclusive Economic Zone (EEZ) off Alaska, and commercial, subsistence, and recreational halibut fisheries in U.S. Convention waters off Alaska, as well as the operational inseason management of fisheries under Federal management. In addition, funds are used for the identification and conservation of Essential Fish Habitat (EFH) affected by fishery management actions and environmental review of non-fishing related activities that may adversely affect habitat described as EFH or other habitats for living marine resources.
- *Charters in Lieu of COBB*: These funds provide charter vessel support for the NMFS Alaska Fisheries Science Center's fishery-independent surveys, habitat assessments, longstanding marine mammal research, and logistical support of the Little Port Walter

remote field station in Southeast Alaska. These funds are necessary since the *John N. Cobb* vessel was retired in FY 2008.

- *Pacific Islands Region/Center*: Funds are included to support effective science-based fishery management decisions and advance peer-reviewed ecosystem science within the Pacific Islands. Furthermore, this base funding enhances the ability of NMFS and the Western Pacific Fishery Management Council to deliver timely, accurate advice and scientific input to inquiries from NMFS and other stakeholders.

National Catch Share Program: The FY 2012 President's Budget request proposes a new line called the National Catch Share Program. Approximately \$17.4 million in catch share funds is being moved from Fisheries Research and Management Programs and Cooperative Research into this new line. "Catch share" is a general term for several fishery management strategies that allocate a specific portion of the total allowable fishery catch to individuals, cooperatives, communities, or other entities. Each recipient of a catch share is directly accountable to cease fishing when its specific quota is reached. The term includes specific programs defined in law such as limited access privilege (LAP) and individual fishing quota (IFQ) programs, and other exclusive allocative measures such as Territorial Use Rights Fisheries (TURFs) that grant an exclusive privilege to fish in a geographically designated fishing ground.

Catch share management provides an option to improve the economic and ecological quality of certain fisheries. A number of U.S. fisheries are under-performing biologically and economically and require the consideration of additional tools to improve management effectiveness. For example, rebuilding U.S. stocks would increase the annual commercial dockside value by an estimated \$2.2 billion (54 percent). Given the challenges facing U.S. fishery managers, the best available science and practical experience support the conclusion that it is in the public interest to encourage and support the evaluation of catch share programs authorized under MSA.

Congress, in its 2006 amendments to the MSA, and national experts, have recognized that catch shares are a tool that should be available for use in any fishery, subject to general guidelines for their design. This management strategy is not new. Catch share programs have been used in the U.S. since 1990 and now includes 15 different fisheries from Alaska to Florida managed by six different Councils. Additional U.S. fisheries are in the process of adopting a catch share program in the coming years. Both here and in other countries catch shares have shown they can effectively achieve annual catch limits, reduce the negative biological and economic impacts of the race for fish, and when properly designed can eliminate overfishing and result in safer and more profitable fisheries while also addressing other social objectives. The base amount includes:

- Activities and capabilities that support and promote catch share programs. This category includes program management at the national and regional levels, improvements in fishery-dependent data collection systems to support future catch share programs, quality control on historic catch data to support individual or group allocations, fishery data management, social and economic data collection or analysis, adjudication of administrative appeals by program participants, and cost recovery. This also may include electronic reporting, quota accounting, and a lien registry.
- Analysis and development of new catch share programs being considered by Regional Fishery Management Councils. Catch share programs typically take several years of analysis, stakeholder participation, and regional council deliberation before being

adopted. Catch Share Plans are more complicated than many fishery management plan amendments, and thus carry increased costs for analysis of alternatives and their impacts. Special stakeholder committees and workgroups (requiring funds for staff support and meetings) are often established to advise the regional council on appropriate alternatives.

- Implementation and operation of specific catch share programs, including NE Sectors, Pacific Trawl ITQ, Gulf of Mexico Grouper/Tilefish, and Mid-Atlantic Tilefish. Key implementation activities include hiring of management and enforcement staff, establishment of share accounting databases and reporting systems, identification of eligible participants, issuance of catch shares, computation of annual quota for each participant, and adjudicating administrative appeals of the eligibility and catch share decisions. These activities need to be completed before fishermen begin fishing under the catch share program. The operational costs include program administration, monitoring, enforcement, and science evaluation. Some or all of the incremental operational costs for the catch share programs that meet the definition of a LAP program under MSA can be recovered once the catch share program is operational. Agency cost recovery is capped at a maximum of 3 percent of the ex-vessel value of the fishery.

These base resources are accounted for in the continuing operation and maintenance of existing programs and the components of the national infrastructure, which include quota accounting, data management and handling issues with permits and appeals.

Expand Annual Stock Assessment (EASA): One of NMFS's core functions within the Agency is to provide accurate fish and shellfish stock assessments with timely updates, which are also a critical foundation for successful catch shares programs. This activity is used to determine the changes in abundance of fishery stocks in response to fishing and to forecast future trends of stock abundance and sustainable fishery yield. These assessments provide the technical basis for fishery management decisions, such as setting ACLs to achieve optimum yield from the fishery while avoiding overfishing and ecosystem harm.

Major data collection efforts include catch and biological data collected directly from the fisheries, fishery-independent surveys conducted on chartered vessels or NOAA Fishery Survey Vessels, and processing of biological samples to determine fish age and growth. Typically, the fishery catch monitoring is a year-round continuous activity to monitor the total fishery catch and the fishery-independent surveys are conducted annually to track changes in the abundance, distribution and biological characteristics of the fish stocks. Collectively, these activities allow NMFS to update or initiate approximately 75 fish stock assessments each year. The program achieves efficiency through increased standardization of methods and establishment of protocols as well as an objective and transparent process to prioritize stocks based on established criteria. Examples include: national working groups to share development efforts among all regions; widespread adoption of consistent assessment modeling software; and well-defined review processes to shorten time lag between assessment completion and management action.

Economics And Social Science Research: This activity maintains programs for the collection and analysis of socioeconomic data. This capability includes a broad range of economic and social science data, research, modeling tools, and improved social science literacy. The FTEs supported by this program design and manage economic and social data collections on commercial and recreational fisheries, other recreational uses of living marine resources and their habit, marine-related sectors, and fishing communities. Furthermore, social scientists

evaluate the economic and social impacts of management measures on fishery participants, businesses, others who benefit from consumptive and non-consumptive uses of living marine resources, and communities, including the effects of catch share and other rights-based management programs. They also conduct research to support marine spatial planning that includes assessing public values for alternative marine managed area sites and allowed uses.

This program also provides vital scientific support for ecosystem-based management by developing economic models that enable the evaluation of trade-offs based upon potential risks and perturbations to the marine ecosystem. These programs contribute to NMFS efforts to assess, manage, and promote the conservation of living marine resources by providing scientific support including the assessment of social and economic impacts on commercial and recreational fisheries and coastal communities for a wide variety of management actions.

Salmon Management Activities: This base funding supports research and management activities associated with salmon not listed under ESA and is comprised of three main activities: the Mitchell Act–Columbia River hatcheries, Pacific Salmon Treaty, and Chinook salmon research and management. The Mitchell Act component supports the operations and maintenance of Columbia River hatcheries to mitigate the loss of fish production due to hydroelectric dams. Through grants and contracts, the States of Washington, Oregon, and Idaho, and the U.S. Fish and Wildlife Service operate the Mitchell Act hatcheries to mitigate the loss of salmon caused by dams on the Columbia and Snake Rivers.

The Pacific Salmon Treaty component funds NMFS and the States of Alaska, Washington, Oregon, and Idaho to provide personnel support to the Pacific Salmon Commission's technical committees and conduct a broad range of salmon stock assessment and fishery monitoring programs to produce information required to implement Pacific Salmon Treaty provisions. These programs are carried out in fisheries and rivers located from Southeast Alaska to Oregon, including the Columbia River.

Regional Councils And Fisheries Commissions: This is the sole source of base funding for the eight Regional Fishery Management Councils. The Councils were established by the MSA to prepare fishery management plans for the Nation's fisheries for submission to the Secretary of Commerce for approval. Council members are appointed and consist of members from state governments, industry and academia. The funding is divided among the eight councils and is used for their operating costs such as staff costs, rent, public meeting costs, council member salaries and travel. It also supports the following Interstate Fish Commissions and their related activities:

- The Regional Fishery Management Councils prepare fishery management plans for the Nation's fisheries for submission to the Secretary of Commerce for approval. Council members are appointed and consist of members from state governments, industry and academia.
- International Fisheries Commissions was established in 1993 to meet U.S. obligations regarding joint enhancement efforts on the Transboundary River system as specified in the U.S.-Canada Agreement Relating to the Pacific Salmon Treaty. The program involves supplementing the number of sockeye salmon available to fishermen by increasing fry production from several Transboundary Lakes through hatchery incubation in the U.S. The program utilizes otolith (inner ear) mass marking to identify these enhanced fish as a means to monitor the program and to aid in the management of fisheries targeting the Transboundary River stocks.
- The Commissions are comprised of the following groups:

- The Atlantic States Marine Fisheries Commission was formed by the Atlantic coastal states in 1942 for the promotion and protection of coastal fishery resources. The 15 member states of the Commission are: Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, and Florida.
- The Gulf States Marine Fisheries Commission (GSMFC) is an organization of the five states (Texas, Louisiana, Mississippi, Alabama, and Florida), whose principal objectives are the conservation, development, and full utilization of the fishery resources of the Gulf of Mexico, to provide food, employment, income, and recreation to the people of these United States.
- The Pacific States Marine Fisheries Commission's primary goal is to promote and support policies and actions to conserve, develop, and manage our fishery resources in California, Oregon, Washington, Idaho and Alaska.

Fisheries Statistics: Funds are used to manage and conduct data collection, data processing, statistical analysis, information management, and statistical reporting activities for commercial and recreational fisheries. Accurate data and reliable statistics on fishing effort and catch are essential for assessing fishing impacts on fish stocks, as well as for monitoring fishing performance relative to fishery management targets. The majority of these funds are used to support NMFS statisticians, fishery biologists, economists, social scientists, and information technology specialists in the regional science centers, regional offices, and headquarters offices. Funds also support: (1) the collection of biological data on commercial and recreational fishery catches in all regions through well-designed survey sampling programs, and (2) the continued development of electronic reporting systems that will deliver more timely landings data for commercial and for-hire fisheries.

The Marine Recreational Information Program (MRIP) uses base funds (1) to continue development of the National Saltwater Angler Registry needed for conducting more accurate and efficient future telephone or mail surveys of recreational fishing activities, and (2) to continue development, testing, and implementation of improved survey designs for the monitoring and assessment of marine recreational fishing participation, fishing effort, and catch. Upgrading NMFS' data collection efforts for monitoring recreational fisheries impacts is important for improving relations with the recreational fishing community and improving Federal fisheries management.

Fish Information Networks: This base supports a number of different state-Federal cooperative programs that work to coordinate data collection, data management, and information management activities that are essential for accurate monitoring of commercial and recreational fishing impacts in each region. These programs collect data and manage information on fishing participation, fishing effort, and catch. They also help to collect fishery-dependent biological data that are needed for stock assessments, as well as some economic data that are essential for use in economic impact and valuation assessments for recreational fisheries.

- Atlantic States Marine Fisheries Commission is used to help fund the Atlantic Coast Cooperative Statistics Program, which coordinates state and Federal fisheries statistics programs for the Atlantic coast.
- Gulf of Mexico Fisheries Information Network is used to coordinate state and Federal fisheries statistics programs for the Gulf of Mexico and the Atlantic coast of Florida.
- Alaska Fisheries Information Network supports the coordination of state and federal commercial fisheries statistics work in Alaska.

- Pacific Fisheries Information Network is used to coordinate state and Federal commercial fisheries statistics programs for both the Pacific and Western Pacific regions.
- Recreational Fisheries Information Network supplements cooperative recreational fisheries statistics and economics programs for the Atlantic, Gulf, and Pacific coasts.
- National Fisheries Information System is used to coordinate cross-regional communication and planning efforts that enhance development of the regional networks while supporting improved national gathering and reporting of statistics on the status of U.S. fisheries.
- Marine Fisheries Initiative (MARFIN) operates a competitive grant program that provides financial assistance for research and development projects that optimize the use of fisheries in the Southeast region.

Survey And Monitoring Projects: These fishery survey and monitoring activities are complementary to those conducted under the Expand Annual Stock Assessments (EASA) line. The fishery-independent survey and monitoring activities supported under this line include bluefin tuna tagging, red snapper monitoring, west coast groundfish surveys, Maine and New Hampshire inshore trawl surveys, Chesapeake Bay multi-species surveys and research, Bering Sea Pollock Research, and Gulf of Maine groundfish surveys to name a few. These targeted surveys and biological investigations improve the information available to conduct accurate stock assessments and directly contribute to the Percentage of Fish Stocks with Adequate Population Assessments and Forecasts (GPRA) performance measure.

Fisheries Oceanography: NMFS' resource management focuses on the connectivity of managed living resources with their predators and their prey, their habitats, and the effects of environmental variation within a determined ecosystem. Humans are also considered to be part of these ecosystems. The ecosystem approach to management relies upon research and analyses that integrate biological, socioeconomic, environmental, and oceanographic data into predictive models that improve the Nation's forecasting capabilities for resource management. NMFS's use of an ecosystems approach increases the ability to make scientifically sound management decisions that are less prone to risk and more likely to succeed. Improved scientific analyses ensure that constituents receive the most accurate and complete analyses, thereby fostering a constructive public stewardship process. The Fisheries Oceanography line includes two programs: Integrated Ecosystem Assessment (IEA) and Fisheries and the Environment (FATE).

- Fisheries and the Environment: FATE is a research program to advance the understanding of environmental impacts on living marine resources in order to improve information available to stock and ecosystem assessments. FATE projects analyze the response of living marine resources to environmental change, including the development of ecosystem indicators, construction of new forecasting models, and development of techniques to incorporate ecosystem indicators into stock or ecosystem assessments.
- Integrated Ecosystem Assessments: The IEA program offers a mechanism to enhance advice to better manage the Nation's resources to achieve economic and societal objectives. Building upon research conducted under other programs, like FATE, IEAs are a dynamic, iterative, and adaptive process that includes the analysis of diverse ecosystem information to manage and conserve essential parts of an ecosystem and ecosystem processes. Through a multi-step approach that includes scoping of specific management issues and objectives with stakeholders; use of

indicators to assess ecosystem status and monitor trends; and ecosystem modeling to evaluate management alternatives, IEA's provide a sound scientific basis for ecosystem-based approaches to the management of living marine resources. The resulting analysis and Management Strategy Evaluations provide resource managers with information to make more cost-effective and informed management decisions in an ecosystem context.

American Fisheries Act: The American Fisheries Act (AFA) requires a suite of management measures that fall into four general categories: (1) regulations that limit access into the fishing and processing sectors of the BSAI pollock fishery and that allocate pollock to such sectors; (2) regulations governing the formation and operation of fishery cooperatives in the BSAI pollock fishery; (3) regulations to protect other fisheries from spillover effects from the AFA; and, (4) regulations governing catch measurement and monitoring in the BSAI pollock fishery.

Interjurisdictional Fisheries Grants: The Interjurisdictional Fisheries Act of 1986 (IFA) is a formula-based financial assistance program with three overall purposes: (1) to promote and encourage state activities in support of the management of interjurisdictional resources, (2) to promote the management of interjurisdictional fisheries resources throughout their range, and (3) to promote and encourage research in preparation for the implementation of the use of ecosystems and interspecies approaches to the conservation and management of interjurisdictional fishery resources throughout their range.

Any state, either directly or through an interstate commission, may submit a research proposal that supports management of fishery resources that: (1) occur in waters under the jurisdiction of one or more states and in the Exclusive Economic Zone; (2) are managed under an interstate fishery management plan; or, (3) migrate between the waters under the jurisdiction of two or more states bordering on the Great Lakes.

Examples of activities supported by this base funding include: management of American Lobster, Atlantic Sea Herring, American shad and river herring, and northern shrimp in the northeast region; research and management initiatives supporting commercial and recreational fisheries of the Great Lakes through research and management initiatives; management of rockfish and groundfish fisheries in the northwest region; development, monitoring, implementation, and revision of fishery management plans for blue crab and striped bass in the southeast and southwest regions; and management of fisheries for stocks of groundfish in the eastern Gulf of Alaska and the internal marine waters of Southeast Alaska.

National Standard 8: The Magnuson-Stevens Act requires all fishery management plans (FMPs) include a fishery impact statement intended to assess, specify, and describe the likely effects of the measures on fishermen and fishing communities (§303(a)). When establishing any new regulations, the cultural and social framework relevant to the fishery and any affected fishing communities (§303(b)(6)) must be taken into account. Values obtained from analyses may also be used for assessing the costs and benefits derived from stock rebuilding programs, protected species recovery efforts and habitat restoration and recovery efforts.

Reduce Fishing Impacts On Essential Fish Habitat (EFH): The Magnuson-Stevens Act, was amended in 1996 to require NMFS to protect habitat that are necessary for the spawning, feeding and growth of fishery species. NMFS works with regional Fishery Management Councils and states to identify EFH for each federally managed fish species and then develop conservation measures to protect and enhance these habitats.

Reducing Bycatch: National Standard 9 of the Magnuson-Stevens Act requires “conservation and management measures shall, to the extent practicable, minimize bycatch and to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.” This funding supports development of new gear technologies that reduce the bycatch of unwanted species and provide observer coverage in fisheries to determine the level of bycatch of overfished stocks, marine mammals, and endangered species. Information on bycatch of these critical species enhances the agency's ability to effectively manage and monitor their recovery. Testing of new gear technologies requires an experimental fishing permit. Most experimental fishing permits require an observer on board to collect data during the test.

Product Quality And Safety: NMFS helps ensure that the Nation's seafood industry is economically sustainable and complies with food regulations. This is done through support for the National Seafood Inspection Laboratory which provides an analysis laboratory, data management, regulatory compliance risk analysis, and information transfer expertise to support the Department of Commerce's National Seafood Inspection Program. Voluntary services, such as sanitation evaluation, product inspection and certification, auditing of food quality and safety programs, and training are also part of the program. Approximately 10 percent of the seafood industry uses NOAA services, and 20 percent of the seafood consumed in the United States is processed by facilities that are inspected by the Program. This line also supports the economic sustainability of fishermen and fishing communities through improvements in the fishing fleet and shoreside processing operations.

Schedule & Milestones:

Fisheries Management

- The Fish Stock Sustainability Index (FSSI), a performance measure for the sustainability of 230 U.S. fish stocks selected for their importance to commercial and recreational fisheries, will increase from 582.5 (FY 2010 actual) to 689 by the end of 2016.
- NMFS will address MSA mandates to implement IUU/Bycatch identification, monitoring, certification procedures, and reports to Congress, and engage in technical assistance to improve the capacity of other countries to conserve and manage living marine resources of mutual interest. (FY 2012-FY 2016)
- NMFS will submit to Congress IUU/Bycatch Identification/ Certification Reports on a biennial basis. In the event of countries are engaging in IUU or bycatch of protected living marine resources, the Program will coordinate with other government agencies to consider possible fishery-product trade restrictions.

National Catch Share Program (FY 2012 - 2016)

- NMFS will continue to work with the RFMCs to develop and implement new catch share programs.
- NMFS will observe increased catch per boat annually in fisheries incorporating new catch share programs.

Commercial and Recreational Fish Stock Science (FY 2012 - 2016)

- NMFS will conduct fishery independent surveys to provide stock assessment scientists with the information necessary to conduct stock assessments for commercially and recreationally important species.
- NMFS will improve the quality of marine recreational fishery catch statistics by increasing the number of NMFS subregions with: improved registry-based telephone surveys of recreational anglers for the collection of fishing effort data; improved shoreside surveys of recreational fishing trips for the collection of catch data; and,

improved logbook reporting programs to provide catch and effort data for for-hire fisheries.

- NMFS will conduct non-market recreational fishery valuation surveys for recreationally important fish species.
- NOAA will assess how changes in the distribution of seasonal sea ice are affecting the distributions of economically important fish and shellfish and ice-dependent marine mammals, enabling scientists to distinguish between changes due to commercial fisheries and those due to natural causes.

Ecosystem Science

- NMFS will continue work on the California Current IEA and provide resulting Management Strategy Evaluations to resource managers, begin the development of IEAs into other regions, starting with the Gulf of Mexico and Northeast Shelf in FY 2012
- NMFS will develop and evaluate environmental indicators for improving stock assessments and integrated ecosystem assessments. (FY 2012 – 2016)

Economics and Social Science

- Partnering with state agencies and fishing commissions, as appropriate, NMFS will expand its economic and social data collection programs. (FY 2012-2016).
- NMFS will enhance quantitative methods for conducting benefit-cost analyses. Specific tasks include (FY 2012 – 2016): (1) predicting the benefits and costs associated with specific stock rebuilding programs; (2) developing inventories of the use and non-use values of marine ecosystems; and (3) developing values associated with particular types of habitats, including the scope and value of the ecosystems services provided by a habitat.

Deliverables/Outputs:

Fisheries Management

- Provide for agency analysis and research to implement agency responsibilities to identify, consult and certify nations whose vessels engage in illegal, unregulated and unreported (IUU) fishing and bycatch of protected living marine resources (PLMR).
- Provide recommendations to the Secretary of Commerce, after coordination with other agencies, on possible fishery-product trade restrictions on nations whose vessels engage in IUU and bycatch of PLMRs.
- Implement and monitor a worldwide international technical assistance program, including use of bilateral and regional workshops, invitational travel to agency facilities and technology transfer to supports agency domestic conservation and management objectives.
- Ensure the continuation of economically and ecologically sustainable fishing communities in a manner consistent with the goals of the MSA and each Council's fishery management plan objectives.

National Catch Share Program

- Evaluate the direct and indirect social and economic impacts on all sectors associated with new catch share programs.
- Support implementation of Regional Council-specified royalty collection programs related to LAPs and catch share programs, for the initial or any subsequent distribution of allocations consistent with the MSA.
- The number of catch share programs has increase from 12 in FY 2009 to 15 in FY 2011, and will continue to increase as the councils approve additional catch shares.

- Implementation of the LAP programs that do not result in excessive market share, that are mindful of potential harmful effects on fishing communities, and ensure fair and equitable initial allocations of harvest privileges.
- Assessments of the economic and social impacts of management options and current policies on fishery participants, firms, and communities.

Commercial and Recreational Fish Stock Science

- Four new fishery-independent surveys, potentially including a clam survey in the Northeast using charter vessels and, in several regions, use of advanced technologies to survey fish stocks inhabiting rough terrain that cannot be surveyed with current methods.
- More precise estimates of recreational catch through expanded use of telephone surveys that are based on the National Saltwater Angler Registry and implementation of both improved shoreside surveys of shore and private boat fishing trips and improved logbook reporting of effort and catch on for-hire boat fishing trips.
- Increased the number of charter days by 20 to cover the expanded area of commercially fished stocks in the Bering Sea.

Ecosystem Science

- Environmental indicators and predicted impacts on managed species will be delivered to appropriate stock assessment scientists and management councils.

Economics and Social Science

- Assessments of the benefits/cost-effectiveness of fisheries rebuilding programs and habitat and protected species recovery programs
- Assessments of the economic and social impacts of management options and current policies on fishery participants, firms, and communities.
- Developed indicators describing the status and trends of fishery participants and shoreside firms and communities, which will help detect economic and social change.

Performance Goals and Measurement Data

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Fish Stock Sustainability Index (17a)	586	600	625.0	644	669	689.0
Percentage of Fish Stocks with Adequate Population Assessments and Forecasts (17b)	60.4%	59.1%	57.8%	57.0%	55.7%	54.8%
Number of defined management needs, identified through the Integrated Ecosystem Assessment process, met by Management Strategy Evaluations (cumulative)	4	6	8	10	16	20
Description: This measure tracks the annual performance of IEAs by identifying the number of management needs, as defined by resource managers through the IEA process, that are met by a Management Strategy Evaluation (MSE). MSEs are a formal approach using models and forecast scenarios, based on the best available science, to evaluate the benefits and risks (trade-offs) of proposed management actions on ecosystems (including the human component) and to inform management decisions.						
Number of catch share programs in place	15	15	15	15	15	15

Description: The number of catch share programs increases as new programs are implemented.						
Number of key objectives met in new catch share programs	7	7	7	7	7	7
Description: This measure tracks the number of key objectives met by catch share programs. The key objectives are: <ul style="list-style-type: none"> • Increased total revenue of fishery (with catch share program)* • Increased or full utilization of target species* • Decreased bycatch* • ACL not exceeded *Changes will be determined by comparing the performance under the catch share program with the average performance prior to implementation of the catch share program.						
Number of new catch share programs meeting all objectives	0	0	0	0	0	0
Description: The number of key catch share program objectives met includes the four key objectives that are expected outcomes of implementing catch share programs. By meeting these key objectives, the programs will demonstrate their success in improving the ecological and economic health of that fishery. More detailed information will be reported on a fishery-by-fishery basis when available.						

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PROGRAM CHANGES FOR FY 2012:

Fisheries Research and Management Programs (Base Funding: 10 FTE and \$3,750,000 Program Change: 0 FTE and -\$750,000): NOAA requests a decrease of 0 FTE and \$750,000 for a total of \$3,000,000 and 10 FTE. In the Consolidated Appropriations Act, 2010, Congress provided \$750,000 for science and management activities associated with the Pacific Marine Monuments. These funds were used to supplement base funding for shipboard and shore-based surveys, and establish the science capacity within American Samoa, Guam and Commonwealth of the Northern Mariana Islands, that is essential to providing the best available science for proper management of the National Marine Monument's. This additional amount is not required in FY 2012 as the request provides \$3,000,000 in the Fisheries Research and Management Programs budget line to sustainably manage three marine national monuments in the Pacific Ocean; including conducting fisheries and living marine ecosystem observation and monitoring, support of the Monument Advisory Council, conserve essential fish habitat designations, and consult on protected species.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Marine Fisheries Service
Subactivity: Fisheries Research and Management

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	-750
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>-750</u>

National Catch Share Program (Base Funding: 7 FTE and \$17,402,000; Program Change: +10 FTE and +\$36,600,000): NOAA requests an increase of 10 FTE and \$36,600,000 for a total of \$54,002,000 and 17 FTE, to accelerate and enhance implementation of a National Catch Share Program. Rebuilding our Nation's fisheries is essential to preserving the livelihood of fishermen, the economies of our coastal communities, a sustainable supply of healthy seafood, and restoring ocean ecosystems to a healthy state. Catch share programs give fishermen a stake in the benefits of a well-managed fishery, and therefore greater incentive to ensure effective management.

Proposed Actions

This increase will support the development, implementation, and operation of catch share programs in fisheries across the nation. Market-based approaches to fisheries management—variously called catch shares, limited access privilege programs, and sector management—create incentives for fishermen to engage in sustainable and economically efficient fishing practices that conserve and protect the fishery, thereby maximizing the current and future value of the resource. Fifteen catch share programs are currently in place.

The requested increase supports analysis and evaluation of fisheries for catch share programs, the development of fishery management plans and regulations, observing and monitoring at sea and on shore for specific fisheries, and enforcement activities. It also continues to implement electronic log books, and dockside data collection and management, including quota accounting and lien registry. The funding also increases NMFS's analytical capacity to evaluate and report performance of catch share monitoring programs with respect to economic performance, fleet behavior, annual catch limits, and bycatch reduction. Under the FY 2011 CR, NOAA was able to partially fund certain critical needs for fisheries transitioning to catch share management, but significant gaps in the resources and infrastructure required to effectively and efficiently track, monitor and manage these fisheries still exist and will remain without additional support.

Key catch share programs, such as the Northeast Multispecies sector program, the West Coast Trawl Individual Quota program and the Gulf of Mexico Grouper and Tilefish program will be supported by this increase. The transition in New England, which began in 2009, to sector management (a type of catch share program) for the Northeast multispecies fishery will improve the economic health of the fishing industry while also meeting conservation mandates. The Northeast Multispecies Fishery is one of the most important U.S. fisheries. The fishery has problems with overcapacity and quotas have been significantly reduced in order to end overfishing and rebuild those stocks, causing significant short term revenue losses to the industry. NOAA's investment in this catch share program, particularly for fishery monitoring, is critical to ensure that the program succeeds and the fishery is maintained until the stocks rebuild further, revenues increase and the industry can pay more of the costs.

During FY 2012, NMFS will:

- Ensure the successful implementation and/or operations of the following catch share programs:
 - Pacific: West Coast Trawl Individual Quota (TIQ)
 - Northeast: Northeast Multispecies Sectors, Mid-Atlantic Tilefish
 - Gulf of Mexico: Grouper and Tilefish
 - North Pacific: Gulf of Alaska Trawl Rockfish Cooperative, Alaska Halibut Guided Sportfish Individual Fishing Quota (IFQ)
- Work with Regional Fishery Management Councils to analyze and evaluate fisheries for suitability of catch share programs. Develop additional catch share programs across the country.

- Work with industry to implement observing, catch monitoring, and quota monitoring systems needed for accurate and transparent catch share tracking.
- Integrate and standardize these systems to improve efficiencies and realize economies of scale.
- Develop a consistent, comprehensive approach for analyzing and documenting the biological, ecosystem, economic, and social impacts of management strategies; develop indicators for fishery sustainability; and provide consistency and economies of scale in managing the program nationwide.
- Align resources to enable NOAA Enforcement to monitor adherence to the changing guidelines and regulations for the catch share fisheries, including enforcement of individual and group quotas.

As catch share programs mature, resources will be reallocated in future years to support the transition to and implementation of catch share programs in additional fisheries. Most catch share programs are subject to cost recovery of up to three percent of the ex-vessel value of the fishery.

Statement of Need and Economic Benefits

Catch shares allocate a dedicated percentage or share of a fishery's total catch to individual fishermen, communities, and/or associations. When participants have a secure portion of the catch, they gain the flexibility to make business decisions that improve safety, enhance the value of their share, and promote sustainable fishing of the stocks. Coupled with an observing, monitoring, and catch accounting system, incentivizing specific entities to control catch is extremely effective in preventing overfishing. Catch shares eliminate the race for fish among fishermen competing for a common quota—a race that can lead to overcapacity in the fishery, increased bycatch and waste, and overfishing. Catch shares improve the economics of the fishery by allowing fishermen to harvest their shares when the markets are best and to take other actions to reduce costs and increase revenue without fear of losing access to their share of the quota. One of the major benefits of catch share programs is that they provide incentives to self-govern, thereby reducing the need for more rigid regulatory measures. They also provide a mechanism for fishermen to exit the fishery by realizing revenue from their share. Other benefits include reducing bycatch and overfishing, and rebuilding stocks.

To implement a nationwide catch share management approach, NOAA must conduct comprehensive analysis and evaluation of the Nation's fisheries, work with the Regional Fishery Management Councils to develop the catch share programs through fishery management plan amendments and regulations, integrate systems to monitor catches, and track permit transfers. For programs currently in place, NOAA has developed most of these systems on an ad-hoc basis, but now NOAA needs to integrate and standardize them to improve efficiencies and realize economies of scale. This transition will ultimately ensure the long-term sustainability of these fisheries. Because a higher level of monitoring is needed to ensure that individual or group quotas are adhered to—particularly in a mixed stock fishery—monitoring and enforcement costs may be greater than for the other management programs.

The requested increase builds on NOAA's existing capabilities for analysis, regulation, administration, enforcement, training, and logistical support for observers and monitors and is based on an agency-wide analysis conducted with input from all levels of NOAA. NOAA began implementation of ACLs in 2009. ACLs will continue to be an important management tool under catch shares, providing a scientific basis for determining the amount of fish that can be

harvested sustainably. Catch share programs build on ACLs by allocating the harvest among participants.

The scientific evidence is compelling that catch shares can also help restore the health of ecosystems and put fisheries on a path to profitability and sustainability. A recent Environmental Defense study, *Sustaining America's Fisheries and Fishing Communities*, shows catch shares protect the environment, increase profits, provide higher quality fish, create more full-time jobs, and save lives. The use of well-designed catch shares is a proven way for many fisheries to meet the conservation mandates of the Magnuson-Stevens Act while keeping fisheries profitable and sustainable. The Surf Clam and Ocean Quahog program in the Mid-Atlantic region and the Pacific Halibut and Sablefish program in Alaska have been in place more than 15 years and have a record of economic and conservation success. For example, the length of the season in the Halibut and Sablefish Fishery has been extended from less than a week each year to eight months allowing fishermen to earn sustainable income. In addition, bycatch dropped 80% following implementation of catch shares. In the Gulf of Mexico Red Snapper Fishery, the price per pound of red snapper has increased by 61 percent since 2007.

Base Resource Assessment:

The base resources for this activity are described in the Fisheries Research and Management base narrative.

Schedule and Milestones:

	FY12	FY13	FY14	FY15	FY16
Work with regional councils to develop new catch share programs	X	X	X	X	X
Work with regional councils to implement new catch shares	X	X	X	X	X
Approximately two of the catch share programs mentioned above will become operational	X	X	X	X	X
Observe increased annual revenue per vessel in fisheries incorporating new catch share programs	X	X	X	X	X
Observe decreased ACL overages in fisheries incorporating new catch share programs	X	X	X	X	X

Deliverables:

- Ensure the continuation of economically and ecologically sustainable fishing communities in a manner consistent with the goals of the MSA and each Council's fishery management plan objectives.
- Support implementation of Regional Council-specified royalty collection programs for the initial or any subsequent distribution of allocations consistent with the MSA.
- The number of catch share programs will increase from 16 in FY 2012 up to 20 in FY 2016.

Performance Goals and Measurement Data

Performance Goal:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Number of catch share programs in place (output)	Target	Target	Target	Target	Target	Target
With Increase	15	16	17	17	19	20
Without Increase	15	15	15	15	15	15
Description: The number of catch share programs increases as new programs are implemented. The baseline includes all catch share program currently in place.						

Performance Goal:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Number of key objectives met in new catchshare programs	Target	Target	Target	Target	Target	Target
With Increase	7	14	16	16	17	18
Without Increase	7	7	7	7	7	7
Description: This measure tracks the number of key objectives met by catch share programs. The key objectives are: <ul style="list-style-type: none"> • Increased total revenue of fishery (with catch share program)* • Increased or full utilization of target species* • Decreased bycatch* • ACL not exceeded *Changes will be determined by comparing the performance under the catch share program with the average performance prior to implementation of the catch share program.						

Performance Goal:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2015
Number of new catch share programs meeting all objectives	Target	Target	Target	Target	Target	Target
With Increase	0	3	4	4	4	4
Without Increase	0	0	0	0	0	0
Description: The number of key catch share program objectives met includes the four key objectives that are expected outcomes of implementing catch share programs. By meeting these key objectives, the programs will demonstrate their success in improving the ecological and economic health of that fishery. More detailed information will be reported on a fishery-by-fishery basis when available.						

PROGRAM CHANGE PERSONNEL DETAIL

Activity: National Marine Fisheries Service
 Subactivity: Fisheries Research and Management

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Fishery Biologist	Gloucester, MA	ZP-4	1	87,548	87,548
Fishery Biologist	St. Petersburg FL	ZP-4	1	80,402	80,402
Fishery Biologist	Seattle, WA	ZP-4	1	85,487	85,487
Enforcement	St. Petersburg FL	ZA-4	2	80,402	160,804
Enforcement	Long Beach, CA	ZA-4	2	89,335	178,670
Enforcement	Seattle, WA	ZA-4	2	85,487	170,974
Fishery Biologist	Galveston, TX	ZP-2	1	42,944	42,944
Fishery Biologist	Seattle, WA	ZP-3	1	59,978	59,978
Fishery Biologist	Seattle, WA	ZP-3	1	59,978	59,978
Fishery Biologist	Newport, OR	ZP-3	1	56,411	56,411
Total			<u>13</u>		<u>983,196</u>
less Lapse		25%	<u>3</u>		<u>245,799</u>
Total full-time permanent (FTE)			10		737,397
2011 Pay Adjustment (0%)					0
2012 Pay Adjustment 0%)					0
TOTAL					<u>737,397</u>

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employer	
Full-time permanent	10
Other than full-time permanent	0
Total	<u>10</u>
Authorized Positions:	
Full-time permanent	13
Other than full-time permanent	0
Total	<u>13</u>

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Marine Fisheries Service
Subactivity: Fisheries Research and Management

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$737
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>737</u>
12 Civilian personnel benefits	221
13 Benefits for former personnel	0
21 Travel and transportation of persons	1,014
22 Transportation of things	0
23.1 Rental payments to GSA	72
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	425
24 Printing and reproduction	144
25.1 Advisory and assistance services	9,438
25.2 Other services	19,604
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	649
31 Equipment	1,810
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	2,486
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>36,600</u>

Expand Annual Stock Assessments (Base Funding: 137 FTE and \$52,120,000; Program Change: +10 FTE and +\$15,000,000): NOAA requests an increase of \$15,000,000 and 10 FTE for a total of \$67,120,000 and 147 FTE to increase the number of stocks with adequate assessments to help verify that overfishing is no longer occurring and safely allow optimum catch levels to be set to support the sustainability and economic viability of Fish Stock Sustainability Index (FSSI) stocks.

Proposed Actions:

Stock assessments are integral to the Department of Commerce's High Priority Performance Goal (HPPG) of Coastal and Ocean Resource Management to reduce the number of stocks subject to overfishing to zero and improve the FSSI. The requested increase in funds will allow for a significant increase in NMFS output capacity of stock assessments, thus allowing optimum fishing opportunity in more fisheries without risking overfishing and harm to the marine ecosystem. NMFS will conduct improved surveys using advanced technologies to estimate fish abundance in additional habitats and conduct workshops to improve standardization and public understanding of assessment methods. The criteria NMFS considers to prioritize stock assessments are (1) commercially and recreationally valuable stocks and associated fishery-limiting stocks with high scientific or management uncertainty influencing annual catch limits; (2) intensity of fishing, including stocks that have an overfishing status, stocks that have fishing rates approaching levels that would lead to overfishing, or stocks with high or increasing fishing pressure that require additional attention; (3) stock abundance including stocks that are overfished or on the brink of overfished, on a rebuilding plan, or have uncertain abundance trends; (4) assessment frequency considerations such as stocks that have never been assessed, stocks that have an assessment that is more than five years old, or stocks with management plans that require more frequent updates than currently provided; (5) stock importance in terms of commercial and recreational value, role in ecosystem, and as bycatch; and (6) synergistic factors including level of data already available and benefit to other stocks and future assessments. Other factors will also impact the way in which stock assessments are prioritized such as shifting monitoring requirements for any of the above stated stocks, shifting management needs, vessel availability, and unforeseeable shifts in stock accessibility due, for example, to environmental conditions favoring/impeding NOAA's ability to survey in specific regions. Ultimately, the particular assessments that will be updated in any given year are determined through regional processes consistent with national priorities and in consultation with Fishery Management Councils and other partners as the execution year approaches.

With these prioritization criteria in mind, NOAA will use the FY 2012 requested funds to:

- 1) Prioritize updating assessments for commercially and recreationally valuable stocks and associated fishery-limiting stocks with high scientific or management uncertainty influencing annual catch limits.
- 2) Prioritize updating assessments for stocks that have an overfishing status until overfishing is no longer occurring. In order to implement MSA, the agency must increase the frequency of assessment updates for stocks that have been experiencing overfishing in order to verify that overfishing has ended and to provide the information needed to prevent re-occurrence of overfishing.
- 3) Increase the updating of assessments that are more than five years old and have lapsed into an "inadequate" status, especially for stocks near the brink of overfishing. The selection of the specific stocks to be assessed in the out years will be determined based on an evaluation of those stocks deemed to be most in need of an updated assessment

at that time and for which sufficient data are expected to be available to conduct the assessment. This ranking occurs regionally in conjunction with the regional Fishery Management Council or international organization, as appropriate.

- 4) Conduct assessments for stocks not previously assessed. Arctic species will be among those targeted for assessment.
- 5) Conduct six new fishery-independent surveys by FY 2016 for commercially important stocks that have not yet been assessed. The new data collection surveys will be initiated to provide data to support assessments of additional stocks in the out-years.
- 6) Conduct a new fishery-independent survey and subsequent assessment by 2016 for one recreationally important stock that has not yet been assessed.
- 7) Improve fishery-independent surveys using advanced sampling technologies, including the following activities:
 - Foster expertise in advanced sampling technologies, such as acoustic and optical methods which can be used to concurrently sample multiple species.
 - Implement existing advanced sampling technologies aboard NOAA's new FSVs, such as the new ME70 multibeam sonar system.
 - Develop and implement innovative sampling technologies to improve fisheries-independent surveys, particularly acoustic and optical remote sensing technologies.
 - Develop and operationally utilize alternative sampling platforms for new fisheries-independent surveys to improve data-poor stock assessments, focusing on stocks in regions that are inaccessible to conventional sampling gear

Statement of Need and Economic Benefits:

Fish stock assessments provide quantitative information on the abundance of fish stocks and the level of catch that can be sustained without harming the marine ecosystem. The role of fish stock assessments has been well-established. National Research Council studies and the Ocean Commission Report both found that a strong fishery stock assessment program is the foundation of successful management of commercial and recreational fisheries.

Furthermore, the MSA, which mandates establishment by 2011 of annual catch limits (ACLs) in all fisheries to prevent overfishing, requires improved assessment capacity. For many fish stocks, the incomplete scientific information resulting from lack of adequate stock assessments forces fishery managers to resort to ad hoc methods for setting annual catch limits in an overly conservative manner, thus limiting fishing opportunity in order to prevent overfishing. For example, some annual catch limits may be reduced by 25% below potential maximum levels of catch in order to implement the buffers necessary to account for scientific uncertainty in estimates of the sustainable level of catch. This will forego millions of dollars in short-term commercial catch and recreational fishing opportunities. Smaller buffers can be implemented by increasing NMFS capabilities to conduct adequate stock assessments, thus increasing economic opportunities for fishing communities whose livelihood depends on the scientifically sound management of fisheries.

The benefits of this program accrue to the American people because stock assessments are a key factor in rebuilding overfished fish stocks and maintaining them at a productive level. While

the ecological and aesthetic value of marine fish stocks cannot easily be measured in dollars, they are just as critical to our Nation.

As more fisheries are moved into Catch Shares management systems, the demand for precise and accurate stock assessments will increase. The marketable value of a Catch Share, as a percentage of the annual catch limit, will be diminished if the level of that annual catch limit fluctuates from year-to-year due to uncertainty in the scientific advice on which it is based. The improved quality of information provided by these stock assessments will support the transition of fisheries to Catch Shares and help fishery managers determine how Catch Share programs are affecting the stocks. Lack of adequate fish stock assessments throughout this process will put fish, fishermen, and ecosystems at risk.

Finally, fishermen, fishery businesses, and the conservation-minded public have a keen interest in safe and sustainable seafood practices. Constituents engage strongly, and often contentiously, when the agency sets long-term fishery policy and determines the annual level at which fishing can occur. Frequently their concern is directed at the quality of the science supporting agency decisions. Decisions based on weak science are not trusted, easily challenged, and often delay implementation. Accurate and precise scientific assessments are needed to garner the trust of the affected public.

Base Resource Assessment:

The base resources for this activity are described in the Fisheries Research and Management base narrative.

Schedule and Milestones:

	FY12	FY13	FY14	FY15	FY16
Update assessments for stocks with an overfishing status (annually as necessary)	X	X	X		
Update expired assessments to inform catch limits		X	X	X	X
Maintain adequate assessments for FSSI fish stocks to support safe and sustainable annual catch limits	X	X	X	X	X
Design and acquire equipment for new field surveys	X				
Conduct new fish abundance surveys		X	X	X	X
Conduct regional workshops to improve the fishery public's understanding of the role of stock assessments in setting catch limits	X	X	X	X	X

Deliverables:

FY12:

- 139 fish stocks with adequate assessments
- Designs for four new fish abundance surveys
- Acquisition of equipment to conduct new surveys
- Prioritized schedule for assessments to be conducted during FY 2013- FY 2016.
- Two outreach workshops to improve the fishery public's understanding of the role of stock assessments in setting catch limits.

Performance Goals and Measurement Data

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Percentage of fishery stocks with adequate population assessments and forecasts (17b)						
With Increase	60.4% (139/230)	60.4% (139/230)	63.0% (145/230)	65.7% (151/230)	69.1% (159/230)	72.6% (167/230)
Without Increase	60.4% (139/230)	59.1% (136/230)	57.8% (133/230)	57.0% (131/230)	55.7% (128/230)	54.8% (126/230)

Description: This is a component of the NMFS GPRA Measure: Percentage of Living Marine Resources (LMR) with Adequate Population Assessments and Forecasts. Because of the variation in the time it takes to collect sufficient new data to conduct new stock assessments (typically 1 to 5 years), and the regional and national priorities to maintain assessments for stocks with an overfishing status and high fishing pressures, the significant impacts of the additional funds allowed in FY 2012 will not be seen until FY 2013.

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
DOC's High Priority Performance Measure (HPPG) FSSI (17a)						
With Increase	586.0	600.0	625.0	670.5	674.5	691.5
Without Increase	586.0	600.0	625.0	644.0	669.0	689.0

Description: This is one of DOC's HPPG. The FSSI estimates assume that NMFS will have assessed all of the stocks that are currently subject to overfishing within the FY 2012-2016 time frame. An increase of \$15.0 million in FY 2012 would accelerate the completion of those assessments and drive the FSSI upward most significantly in FY 2014. This is because of the fact that as those assessments are completed, NMFS will know the fishing mortality rate and biomass status of those stocks and expects several will score positively.

PROGRAM CHANGE PERSONNEL DETAIL

Activity: National Marine Fisheries Service
 Subactivity: Fisheries Research and Management

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Fishery Biologist	Seattle, WA	ZP-3	2	61,255	122,510
Fishery Biologist	La Jolla, CA	ZP-3	1	62,451	62,451
Fishery Biologist	Woods Hole, MA	ZP-3	1	62,758	62,758
Fishery Biologist	Miami, FL	ZP-3	1	60,742	60,742
Fishery Biologist	Honolulu, HI	ZP-3	1	47,917	47,917
Fishery Biologist	Seattle, WA	ZP-4	2	87,306	174,612
Fishery Biologist	La Jolla, CA	ZP-4	1	89,012	89,012
Fishery Biologist	Woods Hole, MA	ZP-4	1	89,449	89,449
Fishery Biologist	Miami, FL	ZP-4	1	86,575	86,575
Fishery Biologist	Honolulu, HI	ZP-4	1	79,565	79,565
Fishery Biologist	Silver Spring, MD	ZP-3	1	62,467	62,467

Total			<u>13</u>		<u>938,058</u>
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less Lapse	25%		<u>3</u>		<u>234,515</u>
Total full-time permanent (FTE)			10		703,544
2011 Pay Adjustment (0%)					0
2012 Pay Adjustment (0%)					<u>0</u>
TOTAL					703,544

<u>Personnel Data</u>	<u>Number</u>
Full-Time Equivalent Er	
Full-time permanent	10
Other than full-time permanent	<u>0</u>
Total	10

Authorized Positions:	
Full-time permanent	13
Other than full-time permanent	<u>0</u>
Total	13

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Marine Fisheries Service
Subactivity: Fisheries Research and Management

Object Class		2012 Increase
11	Personnel compensation	
11.1	Full-time permanent	\$704
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	<u>704</u>
12	Civilian personnel benefits	210
13	Benefits for former personnel	0
21	Travel and transportation of persons	150
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	8,500
24	Printing and reproduction	20
25.1	Advisory and assistance services	11
25.2	Other services	220
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	147
31	Equipment	3,038
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	2,000
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	<u>15,000</u>

Salmon Management Activities: Pacific Salmon Treaty (Base Funding: 8 FTE and \$22,175,000; Program Change 0 FTE and -\$13,500,000): NOAA requests a decrease of \$13,500,000 and 0 FTE for a total of \$8,675,000 and 8 FTE to reflect the planned completion of activities in FY 2011 related to the implementation of the Pacific Salmon Treaty within the Salmon Management Activities budget.

Proposed Actions:

The reduction of \$13.5 million was planned with the implementation of the revised 2008 Pacific Salmon Treaty. The remaining \$8.7 million in overall Pacific Salmon Treaty funding includes the base funding level (\$5.7 million) for treaty implementation, as well as \$3.0 million to implement the 2008 Chinook salmon agreement:

- Coded Wire Tag (CWT) Program Improvements: \$1.5 million
- Puget Sound Critical Stocks Augmentation: \$1.5 million

The reduction includes a planned decrease for the Alaska fishery adjustment mitigation of \$7.5 million. These funds were provided to partially mitigate the economic consequences of Alaska reducing its harvest of Chinook in Southeast Alaska by 500,000 fish in fulfillment of the Pacific Salmon Treaty obligations. In addition, a planned reduction of \$6.0 million from \$7.5 million to \$1.5 million is requested for the Puget Sound Critical Stocks Augmentation. The Puget Sound Critical Stocks Augmentation supports projects to assist in recovery of critical Puget Sound Chinook salmon stocks in a manner that complements the benefits of harvest reductions provided by the Treaty revisions, including hatchery actions, such as captive brood and supplementation programs and habitat projects (e.g., barrier removals, stream stabilization, and estuary rehabilitation).

Statement of Need and Economic Benefits:

The Pacific Salmon Treaty provides for the conservation and harvest-sharing of salmon that originate and migrate through U.S. and Canadian waters and hence are harvested in both countries. The original treaty was signed in 1985. The fishing regimes, which are set forth in Annex IV, had all expired after 1992. After a period of dysfunction from 1993-1998, the fishing regimes attached to the Treaty finally were renewed in 1999, with most set to expire at the end of 2008. After nearly two years of negotiations, the Pacific Salmon Commission reached agreement on new fishing regimes in May 2008. These new arrangements were formerly approved by both countries and now will be in effect through 2018.

The Chinook salmon provisions of the Agreement have been revised significantly to ensure the conservation and fair harvest-sharing of thousands of separate Chinook salmon stocks, ranging from healthy and abundant stocks to threatened and declining ones, including several from the Pacific Northwest that are listed under the ESA. The Chinook regime represents a major step forward in bilateral cooperation, science-based conservation, and sustainable harvest-sharing of the salmon resource. The new provisions of the Pacific Salmon Treaty significantly reduce allowable annual Chinook harvests in Southeast Alaska and off Canada's west coast of Vancouver Island. Over the 10-year life of the Agreement, approximately one million fewer Chinook will be caught in these fisheries as a result of the approximately 500,000-fish catch reduction in each of these two fisheries.

Base Resource Assessment:

The base resources for this activity are described in the Fisheries Research and Management base narrative.

Schedule and Milestones:

	FY 12	FY 13	FY 14	FY 15	FY 16
Chinook Salmon Agreement obligations met	X	X	X	X	X
Other Pacific Salmon Treaty obligations met	X	X	X	X	X

Deliverables:

Continue to meet base treaty obligations plus the additional programs associated with the 2008 Chinook agreement obligations under the Pacific Salmon Treaty which include the Coded Wire Tag program improvements and the Puget Sound Critical Stocks Augmentation through 2018.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Marine Fisheries Service
Subactivity: Fisheries Research and Management

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	-13,500
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>-13,500</u>

Salmon Management Activities: Columbia River Hatcheries – Monitor, Evaluation, and Reform (Base Funding: 3 FTE and \$11,704,000; Program Change: 0 FTE and -

\$10,000,000) NOAA requests a decrease of 0 FTE and \$10,000,000 for a total of 3 FTE and \$1,704,000 for Hatcheries – Monitor, Evaluation and Reform. In the Consolidated Appropriations Act, 2010, Congress provided an additional \$10,000,000 to implement reforms developed by the Hatchery Scientific Review Group. With these additional funds NOAA externally marked hatchery production, implemented hatchery reform program modifications, complied with environmental laws and regulations, researched and tested selective commercial fishing gear and maintained aging facilities. This additional amount is not required in FY 2012, The FY 2012 President’s Request supports studies and development, evaluation and implementation of measures to reform hatchery operations to minimize their impacts to ESA listed salmon while allowing sport, commercial and treaty Indian fishery access to Columbia River hatchery production. In addition, hatchery projects benefitting protected and at-risk salmon stocks are eligible for funding through the Pacific Coastal Salmon Recovery Fund.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Marine Fisheries Service
Subactivity: Fisheries Research and Management

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	-10,000
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	-10,000

Fisheries Statistics: Recreational Fisheries Monitoring (Base Funding: 105 FTE and \$21,446,000; Program Change: +3 FTE and +\$3,000,000): NOAA requests an increase of \$3,000,000 and 3 FTE for a total of \$24,446,000 and 108 FTE to the Fisheries Statistics budget line, to provide an improved recreational fisheries monitoring program that meets fisheries management requirements.

Proposed Actions:

The Magnuson-Stevens Act (MSA) mandates that NMFS establish annual catch limits (ACLs) that prevent overfishing. However, without proper catch monitoring, fishery managers are limited in their ability to prevent the recreational fishing sector from exceeding catch targets. In the past, fishery managers have been obliged to set catch limits at lower levels to account for poor catch monitoring and help mitigate the chance of ACLs being exceeded. Consequences of such actions include less catch, shorter fishing seasons and underutilization of the resource. The proper and timely tracking proposed through this request will support the successful management of fisheries using ACLs and reduce the chance that targets are overshot.

In FY 2012, NOAA requests funding for the following actions:

- **\$2.0 million for more timely production of key data for management:** Fishery managers and stock assessments scientists need more precise recreational fisheries statistics for smaller geographic areas and shorter time intervals to support successful management of fisheries with ACLs and accountability measures (AMs). The Marine Recreational Information Program (MRIP) is currently designing and testing improved sampling and estimation designs which will allow for shorter survey time frames and greater spatial resolution of statistical results. The requested increase would support the execution of telephone and shoreside sampling to address this need and increase the spatiotemporal resolution of resulting catch and effort statistics in two NMFS regions by FY 2016. This will result in better catch monitoring, accomplished by implementing monthly, rather than bimonthly, surveys of shore and private/rental boat catches. The additional data collection work will be performed by either state agency personnel funded through cooperative agreements or survey research firms funded by contract.
- **\$1.0 million for better data on the “For-Hire” recreational fishery sector:** Fishery managers need more timely reports of recreational catches to successfully track progress toward ACLs during the fishing season. The requested funds would support the phased implementation of mandatory electronic logbook reporting programs for charter boats and headboats in two NMFS regions by FY 2016. They will also support independent on-site sampling surveys that would be used to validate the self-reported logbook data. The MRIP is currently designing the on-site surveys that would be used to assess and measure reporting errors and account for them in statistical estimates of total fishing effort and catch. The use of electronic technologies will provide more timely transmission of logbook reports and support faster, more efficient processing of data.

Statement of Need and Economic Benefits:

The MSA recognized the importance of recreational catch monitoring and statistics, requiring NMFS to:

- (1) Improve the sampling and estimation methods used for monitoring recreational fishery catches by implementing the recommendations of the National Research Council's 2006 “Review of Recreational Fisheries Survey Methods”, and

(2) Improve the timeliness and quality of recreational catch statistics as needed to support successful management of fisheries with ACLs and AMs.

In order to better track fishing progress toward management targets, fishery managers will need to get updated cumulative catch statistics more frequently than the current bimonthly schedule, and they will need to track catches for a limited number of sub-state areas.

Particularly, greater spatial resolution of recreational catch is needed in large states like CA and FL, as well as in a number of other states that comprise more than one fishery management area. In the for-hire fisheries, the need for more timely and detailed catch statistics can be addressed most appropriately by implementing mandatory electronic logbook reporting programs that are validated with independent dockside data collections. The use of electronic technologies will speed delivery of effort and catch data, and the independent validation will assure high quality catch statistics.

These catch statistics are an essential in-season management tool to monitor a fishery's performance relative to the ACLs that have been set for specific fish stocks in any given year. They are also essential to determine whether over-harvest or under-harvest of any given ACL may necessitate a revision of that ACL in a future year. Catch statistics help predict how future catches will be influenced by changes in management measures such as closed seasons, closed areas, catch limits, and size limits that are used to constrain catch within the ACL. Improvements in the timeliness and spatiotemporal resolution of in-season measures of total catch will enable fishery managers to: set ACLs and management measures with greater confidence; hold total catches within those ACLs; and, assure that future ACLs can be set at levels that will sustain fishing opportunities.

Finally, recreational fishery statistics on fishing effort and catch are critical components of stock assessments and their subsequent use in setting appropriate ACLs. For the many fish stocks targeted by marine recreational anglers, accurate measures of the quantities, locations and biological characteristics of recreational catches, discards and harvests are required for accurate stock assessments. Improving the spatiotemporal resolution and precision of recreational catch statistics is critical to improving the stock assessments and the information they will provide to these ACL-driven management systems.

The proposed \$3 million increase will enable NMFS to increase the frequency and accuracy of updated catch reports during the fishing season so that fishery managers can better track progress and take appropriate actions to prevent the recreational fishing sector from exceeding its ACLs. The recreational fishing community wants to reduce the risk of exceeding ACLs, because they realize that overages could trigger AMs that would reduce fishing opportunities in following seasons. With the value of U.S. fisheries in the billions of dollars, the economic consequences of a possible 25 percent reduction in catch limits to prevent overfishing in data-limited situations vastly exceeds the magnitude of this \$3 million investment in FY 2012.

Base Resource Assessment:

The base resources for this activity are described in the Fisheries Research and Management base narrative.

Schedule and Milestones:

Milestones:	FY12	FY13	FY14	FY15	FY16
Conduct monthly telephone and shoreside surveys so that 1-2 regions have sampling levels equivalent to the bimonthly FY11 level.	X	X	X	X	X
Provide statistical estimates of catch for limited number of sub-state areas in 1-2 regions.	X	X	X	X	X
Implement and maintain fully validated electronic logbook programs for for-hire boats in 1-2 regions		X	X	X	X

Deliverables:

- One NMFS region will have monthly telephone and shore side surveys of recreational fishing at sampling levels equivalent to FY 2011 bimonthly surveys by the end of FY 2012. This number will increase to two NMFS regions by the end of FY 2014.
- One NMFS region will have a fully validated electronic logbook program implemented for for-hire boats by the end of FY 2013, and that number will increase to two NMFS regions by FY 2016.

Performance Goals and Measurement Data

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Percentage of recreational sector Annual Catch Limits (ACLs) not exceeded	Target	Target	Target	Target	Target	Target
With Increase	n/a	27%	34%	43%	52%	59%
Without Increase	n/a	12%	19%	27%	33%	40%
Description: This performance goal measures the percentage of recreational sectors that are managed with ACLs that will not exceed their ACL targets from FY 2012-16.						

PROGRAM CHANGE PERSONNEL DETAIL

Activity: National Marine Fisheries Service
 Subactivity: Fisheries Research and Management

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Survey Statistician	Woods Hole, MA	ZP-3	1	62,758	62,758
Survey Statistician	Miami, FL	ZP-3	1	60,742	60,742
Survey Statistician	Silver Spring, MD	ZP-3	2	62,467	124,934
Total			<u>4</u>		<u>248,434</u>
less Lapse		25%	<u>1</u>		<u>62,109</u>
Total full-time permanent (FTE)			3		186,326
2011 Pay Adjustment (0%)					0
2012 Pay Adjustment (0%)					0
TOTAL					<u>186,326</u>

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	3
Other than full-time permanent	0
Total	<u>3</u>

Authorized Positions:

Full-time permanent	4
Other than full-time permanent	0
Total	<u>4</u>

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Marine Fisheries Service
Subactivity: Fisheries Research and Management

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$186
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	186
12 Civilian personnel benefits	56
13 Benefits for former personnel	0
21 Travel and transportation of persons	9
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	3
25.2 Other services	1,828
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	9
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	909
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	3,000

Fisheries Oceanography: Integrated Ecosystem Assessments (Base Funding: 4 FTE and \$2,174,000; Program Change: +5 FTE and +\$5,400,000): NOAA requests an increase of 5 FTE and \$5,400,000, for a total of 9 FTE and \$7,574,000, to support the creation of Integrated Ecosystem Assessments (IEA) for three of NOAA's eight Regional Ecosystems. In FY 2012, this effort will focus primarily on the California Current Ecosystem and include work on the Gulf of Mexico and Northeast Shelf IEAs.

Proposed Actions

IEAs will provide a more comprehensive science-based decision-making framework for NOAA's management of coastal and marine ecosystem resources. IEAs bring scientific and technological rigor to resource management decisions by incorporating diverse sources of data into ecosystem models, including socioeconomic data, that evaluate trade-offs between ecosystem and societal goals. The management strategy evaluation tools provided by IEAs will allow managers to make better management decisions by allowing them to weigh trade-offs between sectoral uses (e.g., fishing, aquaculture, offshore alternative energy development, recreation, and other ecosystem goods and services sectors) and the socioeconomic implications of management actions.

NOAA will develop an IEA framework, providing the analytical basis for ecosystem-based decision support tools, which can be used to assist resource managers and stakeholders in making management action decisions. With the requested funding, NOAA will:

- Partner with and provide at least \$1 million in extramural funding to existing and emerging NOAA partnerships, such as Cooperative Institutes, State and Federal agencies, and academic institutions, to leverage expertise needed for specific IEA objectives in each region.
- Develop a set of integrative ecosystem indicators needed to assess the current and future status of these Regional Ecosystems, such as species diversity, mean trophic level of catch, and proportion of non-commercial species.
- Develop an ecosystem modeling framework to assess and forecast ecosystem status and trends.
- Develop a regional ecosystem data management system that supports all aspects of IEAs and makes ecosystem data accessible.
- Develop technical capabilities for ecosystem/ecological modeling and data management to support IEAs.
- Make IEA capabilities fully operational, including web-based IEA products and services and peer-reviewed documentation.

Funding will also be used to ensure continued access to existing biological, oceanographic, and socioeconomic data required by the ecosystem models to simulate and forecast conditions, and ultimately evaluate the efficacy of management options. The data management system and ecosystem modeling framework will enable analysis of the indicators, and will be used to inform policy regarding potential management actions, monitor changes resulting from actions taken, and develop the ability to evaluate and forecast outcomes resulting from management options. IEA development will begin in the California Current Ecosystem, and NOAA will extend the application of the resulting products and tools to implement IEAs in the Gulf of Mexico and Northeast Shelf Regional Ecosystems.

Statement of Need and Economic Benefits

IEAs provide a comprehensive and holistic approach to ecosystem-based management (EBM), and are an important tool for NOAA's management of the Nation's highly complex and evolving

marine ecosystem resources and services. IEAs will enable the application of an ecosystem-based approach to such critical mandates as fisheries stock assessments, protected resources monitoring, and habitat restoration, as well as evaluation and guidance of management decisions for living marine resources. The application of IEAs to EBM does not imply that traditional stock assessments or monitoring programs are obsolete or ineffective, rather that IEAs capitalize on NOAA's single- and multi-species stock assessments by incorporating assessment and monitoring data along with other data collected by NOAA into ecosystem-wide models that evaluate trade-offs between ecosystem and societal goals. Thus, existing surveys and assessment programs provide critical data for IEAs. The development of IEAs requires an investment of new and dedicated funding for IEA implementation and growth on a national scale to improve our ability to responsibly manage marine resources for the future.

Integrated Ecosystem Assessments will quantify the status of marine ecosystems for regional management bodies, industries (e.g., fishermen and associated groups), and the public to enable them to prepare for environmental changes to the ecosystem. IEAs will not only improve management actions but will also reduce costs to agencies and the public for compliance with environmental regulations. For example, the closure of the 2008 California salmon fisheries was due in part to poor ocean conditions. It is estimated that the closure resulted in over \$100 million in lost revenue to fishermen and coastal communities that rely on the fisheries. With an IEA capability, managers could have forecasts of coastal waters' productivity, and thus the expected status of important fishery populations, providing advance warning of the need for closures and enabling them to take early action to mitigate the effects.

In addition to bringing increased scientific and technological rigor to management decisions, IEAs promote job retention and economic growth by supporting sustainable resource use within various sectors (e.g., fishing, aquaculture, offshore alternative energy development, recreation, and other coastal and marine ecosystem goods and services). The management strategy evaluation tools provided by IEAs will allow managers to weigh trade-offs between sectoral uses and determine socioeconomic implications of management actions. For example, understanding the balance between offshore wind energy farms, commercial fisheries, and aquaculture facilities is key to maximizing economic growth and job creation/preservation in each sector while considering ecosystem health. This provides greater consistency and dependability in job sectors reliant on marine ecosystems. At a local- to regional-scale, IEAs will require support for data management and ecosystem modeling, thus spurring creation of green jobs. Furthermore, this project directly supports both federal and non-federal jobs through the growth of the IEA program by hiring experts to advance scientific and technological development to further NOAA's understanding of ecosystem processes.

Schedule & Milestones:

IEA Milestones	FY12	FY13	FY14	FY15	FY16
Adaptation and expansion of data management framework	CCE NE GOM				
Adaptation and expansion of ecosystem models	CCE NE GOM				
Scoping to identify data gaps, management needs	CCE NE GOM				
Complete building of initial IEA	CCE				GOM

IEA updated with new information		CCE	CCE	CCE	CCE
Delivery of Management Strategy Evaluations (MSE)	CCE	CCE	CCE	CCE	CCE GOM

* California Current (CCE), Gulf of Mexico (GOM), Northeast Shelf (NE)

Deliverables:

Funds in FY 2012 will provide the following for California Current

- Coast-wide scoping process
- Integrative ecosystem indicators
- Economic input-output models and climate models linked to ecosystem models
- Risk Assessment
- Evaluation of management strategies
- Update to Ecosystem Status Report and management outreach products
- Expanded data management framework

Funds in FY 2012 will provide the following for Gulf of Mexico and Northeast Shelf:

- Initial scoping processes
- Ecosystem indicator development
- Data management and services framework development
- Ecosystem model development
- Identification of data and modeling gaps

Performance Goals and Measurement Data

Performance Goal:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Number of defined management needs, identified through the Integrated Ecosystem Assessment process, met by Management Strategy Evaluations (cumulative)	Target	Target	Target	Target	Target	Target
With Increase	0	4	6	8	10	16
Without Increase	0	0	0	4	4	4

Description: This measure tracks the annual performance of IEAs by identifying the number of management needs, as defined by resource managers through the IEA process, that are met by a Management Strategy Evaluation (MSE). MSEs are a formal approach using models and forecast scenarios, based on the best available science, to evaluate the benefits and risks (trade-offs) of proposed management actions on ecosystems (including the human component) and to inform management decisions.

PROGRAM CHANGE PERSONNEL DETAIL

Activity: National Marine Fisheries Service
 Subactivity: Fisheries Research and Management

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Fishery Biologist/ Oceanographer	Silver Spring, MD	ZP-4	1	89033	89,033
Fishery Biologist	La Jolla, CA	ZP-3	1	62,451	62,451
Social Scientist	Seattle, WA	ZP-3	1	61,255	61,255
IT Specialist	Pacific Grove, CA	ZP-3	1	67,963	67,963
IT Specialist	Woods Hole, MA	ZP-3	1	62,758	62,758
IT Specialist	Miami, FL	ZP-3	1	60,742	60,742
Total			<u>6</u>		<u>404,202</u>
less Lapse		25%	<u>1</u>		<u>101,051</u>
Total full-time permanent (FTE)			5		303,152
2011 Pay Adjustment (0%)					0
2012 Pay Adjustment (0%)					0
TOTAL					<u>303,152</u>

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	5
Other than full-time permanent	<u>0</u>
Total	5
Authorized Positions:	
Full-time permanent	6
Other than full-time permanent	<u>0</u>
Total	6

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Marine Fisheries Service
Subactivity: Fisheries Research and Management

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$303
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>303</u>
12 Civilian personnel benefits	90
13 Benefits for former personnel	0
21 Travel and transportation of persons	56
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	14
25.1 Advisory and assistance services	2,859
25.2 Other services	159
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	1,000
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	904
31 Equipment	15
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>5,400</u>

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APPROPRIATION: OPERATIONS, RESEARCH AND FACILITIES

SUBACTIVITY: ENFORCEMENT AND OBSERVERS/TRAINING

Enforcement

NMFS' Office for Law Enforcement (OLE) is a Federal law enforcement agency charged with the enforcement of resource protection laws under NOAA's jurisdiction. OLE supports activities in the NMFS Offices of the Regional Administrators, Office of Sustainable Fisheries, and Office of Protected Resources, and the National Ocean Service (NOS) Office of National Marine Sanctuaries. OLE's primary mandates are contained within the Magnuson-Stevens Fishery Conservation and Management Act, the Marine Mammal Protection Act, the Endangered Species Act, the National Marine Sanctuaries Act, the Lacey Act, and other Federal statutes and international agreements related to living marine resources.

OLE's supports two objectives: (1) enforce laws and regulations that govern commercial fisheries, international and interstate commerce in marine resources, and human interactions with mammals, and threatened and endangered species; (2) is protecting resources within designated sanctuaries, monuments and protected areas. In all mission areas, OLE is charged to enforce regulations designed to sustain marine resources for future generations. To address these mission requirements OLE implements three primary capabilities: investigating serious violations of resource protection laws and seeking effective civil or criminal prosecution to deter future violations, monitoring regulated activity to deter or detect violations, and conducting outreach to educate resource users of applicable laws and regulations.

These capabilities are carried out with funding appropriated in four components and supplemented by the use of proceeds collected from fines and penalties in enforcement actions that are deposited into an Asset Forfeiture Fund authorized under Section 311 of the Magnuson-Stevens Fishery Conservation and Management Act.

Enforcement and Surveillance:

This funding supports administration and operation of the Office of Law Enforcement. Specifically, funds support NOAA's special agents and officers mission to detect, deter, investigate, and document for prosecution any violations of Federal laws and regulations under the Magnuson-Stevens Fishery Conservation and Management Act, Marine Mammal Protection Act, Endangered Species Act, Lacey, Act and other Federal statutes and international agreements relating to living marine resources.

In response to an internal review of its Law Enforcement Program, NOAA's approach to fisheries enforcement in FY 2012 will emphasize compliance assistance and increases in monitoring and inspections to assist regulated parties understand and comply with fishery regulations. The capabilities associated with deterring violations and investigating egregious violations will be maintained as critical elements in NOAA's enforcement approach but will be part of an integrated approach supporting increased understanding and voluntary compliance by regulated parties. Through this approach to its enforcement mission, OLE's goal is to increase compliance with environmental laws and regulations.

NOAA has revised its policy on the use of fines, penalties and proceeds of property forfeited assets as a result of violations of resource protection laws. NOAA is restricting use of these funds to specific categories of activities and shifting more routine law enforcement expenses to appropriated sources. When finalized, a copy of the NOAA policy for the use of fines, penalties, and proceed from forfeited property can be found at www.noaa.gov.

OLE works closely with the United States Coast Guard and state and territorial marine conservation law enforcement agencies to address the Federal marine conservation mission. The Coast Guard conducts at-sea patrols in support of marine resource protection, during which minor violations are resolved without OLE involvement. More serious violations, such as mislabeling or illegal harvesting, are documented and passed to OLE for investigation and resolution.

Cooperative Agreement with States:

The Cooperative Enforcement Program attempts to integrate enforcement services provided by 27 coastal state and U.S. territorial marine conservation law enforcement agencies into the Federal enforcement mission. Enforcement partners are primarily involved in monitoring activities, both nearshore at-sea and land-based monitoring and inspections. This approach was adopted in light of the size of the geographic jurisdiction, breadth of laws and regulations within NOAA's stewardship responsibilities, the amount of regulated commercial activity (fishing and domestic and international trade), and the amount of recreational use of the marine environment. With only 184 authorized enforcement positions dispersed in 59 offices around the coast of the United States and U.S. territories, OLE staff attempts to concentrate on the investigation and resolution of more serious violations, and attempts to integrate the work of state/territorial enforcement partners and the U.S. Coast Guard to conduct monitoring and inspections activity.

Vessel Monitoring System:

OLE operates the Vessel Monitoring Program, a technology-based program for remote monitoring of fishing vessels. This technology-based satellite communications system remotely reports vessel positions and provides an infrastructure for the communication of vital fishery management data. Electronic monitoring is the most significant advance in efficiency in the at-sea monitoring capabilities. This program has cut the cost of policing protected areas. Prior to VMS implementation the only method used to police protected areas was through surface and air patrols. Both are extremely costly and do not provide 24 hour, seven day a week coverage. VMS does provide this for regulated vessels at reduced monitoring costs.

Implementation of the High Seas Driftnet Fisheries Enforcement Act:

The High Seas Driftnet Fisheries Enforcement Act sets forth U.S. policy on large-scale driftnet fishing beyond the exclusive economic zone of any nation. The Act provides for denial of port privileges and import sanctions against nations conducting the targeted activity. OLE staff are involved in the enforcement of the Driftnet Act. These funds also support the U.S. Coast Guard's Shiprider Program in which the government of the People's Republic of China place marine fisheries enforcement officials on U.S. Coast Guard vessels patrolling the Pacific Ocean to enforce the Driftnet Act. Funds are also used to support international travel in support of U.S. Delegations to Regional Fishery Management Organization meetings and in support of U.S. Government international efforts to manage fishery resources.

Observers/Training

The goal of the Observer Program is to provide accurate and timely information and analyses on the biological, ecological, economic, and social aspects of the Nation's fisheries resources. Fisheries observer programs are a proven, unbiased, and valuable source of information on the Nation's fisheries, and are considered the most reliable and cost-effective means currently available to collect fishery-dependent data used for stock assessments, quota monitoring, and a variety of other purposes.

Since 1972, NMFS has deployed fishery observers to collect catch and bycatch (i.e., the incidental capture of unintended fish species and protected species) data from U.S. commercial fishing and processing vessels. Observers monitor fishing activities on all U.S. coasts and collect data for a range of conservation and management issues. Observers are fishery biologists deployed at sea onboard commercial fishing vessels to collect data and information on fishery catch and bycatch. This includes information on fishing practices, vessel and gear characteristics, fishing locations and times, environmental conditions on the fishing grounds, compliance with fishing regulations, and socioeconomic data. Observers also collect biological samples important for stock assessments and may assist in fish tagging and tag recovery, or in special data collections for stock assessment programs.

Observer programs are implemented in each of NMFS' six regions. Improvements in data collection, observer training, and the integration of observer data with other research are coordinated by the Office of Science and Technology in NMFS headquarters. Collectively, the regional programs and the headquarters office comprise the National Observer Program. Approximately 45 fisheries are monitored by observer programs each year, and the data they collect are often the best means to gather current information on fisheries status. Resources are allocated to each of the regions according to the number of fisheries and sea days that are observed annually in each region. Without these programs, many fisheries would lack sufficient data for effective management. The authority to place observers on commercial fishing and processing vessels operating in particular fisheries is provided by the Magnuson-Stevens Act, the Marine Mammal Protection Act, and the Endangered Species Act.

During FY 2010, NOAA implemented observer programs in each region with approximately 800 observers and 70,000 sea days observed in 45 fisheries nationwide. During FY 2010, NOAA increased observer coverage in the Hawaiian pelagic longline fishery to improve monitoring of sea turtle bycatch in American Samoa, increased observer coverage in the Northeast region to monitor new management measures in the multispecies groundfish fishery, and increased observer coverage in the Southeast bottom longline sector of the reef fish fishery to provide better estimates of sea turtle bycatch. Specific regional accomplishments over the past few years include:

- In FY 2010: the Southeast pelagic longline observer program implemented enhanced observer coverage in the Gulf of Mexico from March through June to monitor landings and discards of bluefin tuna during the bluefin tuna spawning season. This is the only known spawning area for western Atlantic bluefin tuna, a species of concern due to its overfished status. Concerns over bluefin tuna bycatch mortality and a critical need to collect biological samples led to enhanced observer coverage which will continue in FY 2011. The data were used to establish a lower estimate of observer coverage (40%) required to produce the desired level of precision of discard estimates for bluefin tuna in the Gulf of Mexico.
- The Northeast Fisheries Observer Program observed over 11,000 sea days through six monitoring programs in FY 2010. The New England Fishery Management Council's Multispecies FMP includes mandatory observer coverage requirements for several fisheries, and Northeast observers provide this coverage in addition to collecting data on gear performance and characteristics and monitoring experimental fisheries.
- The North Pacific Groundfish Observer Program observed a total of 39,500 sea days across the groundfish fisheries in Alaska in 2010. The data provided by the observers enabled the tracking of over 1,500 separate management quotas for Alaska groundfish. Currently, the North Pacific Observer Program has 100 percent coverage for vessels over 125 feet, which includes the Alaska pollock fishery (the largest U.S. fishery by volume), and 30 percent coverage on vessels 60 to 124 feet in length.

- The West Coast Groundfish Observer Program covered 10 fisheries in 2010 and added the Washington pink shrimp fishery to the list of observed fisheries. Observers record haul information, determine the official total catch, sample hauls for species composition, collect length and age structure data, complete projects related to salmon, and record marine mammal and seabird sighting and interaction data. These data are being used for fish stock and protected species population assessments.
- The Southwest Observer Program monitored the California/Oregon swordfish drift gillnet fishery and the California-based swordfish pelagic longline fishery to document the incidental take of marine mammals, sea turtles, seabirds, target and non-target fish species, and to collect selected biological specimens. The program also collected socio-economic data from vessel owners/operators. The data are being used to develop new bycatch reduction methodologies with the goal of reducing overall bycatch and bycatch mortality of these species.
- The Hawaii Fisheries Observer Program provided 100 percent observer coverage in the shallow-set swordfish fishery and 20 percent coverage in the deep-set tuna fishery. In FY 2010 the program provided 7-12 percent observer coverage in the American Samoa longline fishery. Observers collect data on incidental sea turtle takes and fishing effort. The observers document interactions of all protected species and tallies by species of the fishes that are kept and discarded. They also process selected specimens for life history information. The data will be used to conduct an ESA Section 7 consultation for the American Samoa longline fishery with the goal of reducing overall sea turtle interaction.

Schedule & Milestones:

Enforcement

OLE measures outputs in terms of incidents initiated (documentation of possible violations), man-hours of monitoring and inspection work, and man-hours of outreach to the regulated public. The goal of increasing compliance with management regimes is difficult to measure; a satisfactory outcome measure has not been identified. OLE work performance has fluctuated based primarily on staffing levels with a general increasing trend in outputs.

FY 2009 and 2010 accomplishments include:

- During FY 2009 OLE documented 4,100 reported violations.
- During FY 2009 OLE implemented a formal crime and trade data analysis capability initially focused on international illegal, unreported, and unregulated fishing.
- During FY 2010 OLE implemented an enforcement program addressing large vessel speed restrictions designed to protect Atlantic right whales, an endangered species.
- During FY 2010 OLE assisted in the implementation of new Northeast Multispecies catch share management regime through sector management.
- During FY 2010 OLE documented 3,405 violations.

During FY 2011 OLE is implementing a pilot compliance assistance program in New England focused on the New England groundfish management plan which is implementing a new catch share program with sector management. Additionally, OLE is hiring eight Enforcement Officers to increase the visibility and interaction between NOAA and the regulated fishing community.

During FY 2012 OLE plans to:

- Continue the transition to catch share management and appropriate enforcement strategies.

- Evaluate the pilot programs initiated in New England, develop a model compliance assistance program and initiate plans to implement these programs nationally.

Observers/Training

For 2012–2016, observer programs will continue to provide observer coverage in 45 fisheries nationwide with a goal of expanding observer coverage in existing fisheries and implementing new observer programs in fisheries with bycatch concerns. Observer programs will maintain the number of fisheries with adequate or near adequate observer coverage at 23, and maintain the percentage of fish stocks with adequate population assessments and forecasts.

FY 2012

- The Southeast Fisheries Observer Program will continue to provide: two percent observer coverage in the Southeast and Gulf of Mexico Shrimp Otter trawl fisheries (including rock shrimp); eight percent coverage in the Atlantic, Gulf of Mexico, and Caribbean pelagic longline fishery; 100 percent observer coverage in the Southeast shark and coastal teleost gillnet fishery; 100 percent coverage in the Atlantic and Gulf of Mexico directed large coastal shark bottom longline fishery; and approximately three percent observer coverage in the Gulf of Mexico reef fish fishery.
- The Northeast Fisheries Observer Program will continue to provide 30 percent observer coverage in the New England groundfish common pool, 38 percent for groundfish sectors, and 20 percent in the herring fishery; eight percent in the mid-Atlantic coastal gillnet fishery; eight percent in the Northeast and mid-Atlantic small mesh trawl fisheries; and five percent observer coverage in the mid-Atlantic Illex Squid trawl fishery, two to 13 percent in the Atlantic sea scallop dredge fishery, and five percent in the Northeast and Mid-Atlantic large mesh trawl fisheries.
- The North Pacific Groundfish Observer Program will continue to provide 100 percent observer coverage on vessels longer than 125 feet and 30 percent observer coverage on vessels 60–124 feet. In addition there will be target observer coverage of 30 to 100 percent at shore plants. The North Pacific Groundfish Observer Program is responsible for training, briefing, debriefing, and oversight of observers who collect catch data onboard fishing vessels and at onshore processing plants and for quality control/quality assurance of the data provided by these observers.
- The West Coast Groundfish Observer Program will continue to provide: 10 to 20 percent observer coverage in the West Coast groundfish fishery; one to 10 percent observer coverage in state managed fisheries such as the halibut trawl, nearshore shrimp, and pink shrimp fisheries; 100 percent observer coverage in the at-sea hake midwater trawl fishery.
- The Southwest Observer Program will continue to provide 20 percent observer coverage in the California/Oregon pelagic drift gillnet fishery and 100 percent in the California pelagic longline fishery.
- The Hawaii Fisheries Observer Program will continue to provide 20 to 100 percent observer coverage in the Hawaii pelagic longline fishery, and up to 12 percent coverage in the American Samoa pelagic longline fishery.
- In spring of 2011, NMFS will release the National Bycatch Report (NBR) that will include the first national compilation of bycatch estimate for living marine resources of the United States based on data from federally managed fisheries, as well as state, international, and tribal fisheries where data are available. The NBR will include new performance measures designed to monitor overall bycatch as well as the quality of data and bycatch estimation procedures.

- The Alaska Marine Mammal Observer Program will be monitoring the Southeast salmon gillnet fishery in 2012–2013. Data will be used to document any protected species interactions.

FY 2013–2016

- Each of the programs will continue to provide the same levels of observer coverage and sea days observed in each of the fisheries described above.

Deliverables/Outputs

Enforcement

Major program deliverables include:

FY 2012

- FY 2011 and FY 2012 will be transition years as OLE shifts enforcement emphasis to increase compliance assistance through enhanced outreach to the regulated community, and increases monitoring and inspections activity while maintaining its investigative capability. A reduction in the number of violations is anticipated as outreach efforts increase in their effectiveness. It remains unclear how enhanced compliance assistance and increased monitoring will impact the number of violations, as other factors (economics, environmental) also impact fishers.

FY 2013-2016

- OLE will continue to increase compliance assistance, monitoring and inspection activities as described above.

Observers/Training

Major program deliverables include:

FY 2012

- Data necessary for management of the Nation's fisheries, including information necessary to support management of marine mammals and other protected species.
- Information on catch, bycatch, and biological data necessary for in-season monitoring and stock assessments.
- Information to increase compliance with specific regulations.
- Establishing the contracts needed to hire observers through independent observer provider companies.
- Information needed to support other specified science and management programs.
- Biological information needed for age and growth studies and genetic analyses of threatened or endangered sea turtle populations.
- Information on fishing effort, fishing gear, and specific fishing techniques that minimize bycatch.

FY 2013–2016

- Programs will continue to provide the same products and deliverables described above.

Performance Goals and Measurement Data

Performance Measures:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Enforcement						
Fish Stock Sustainability Index (17a)	586	600	625.0	644.0	669.0	689.0
Number of protected species designated as threatened, endangered or depleted with stable or increasing population levels (17d)	28	30	29	29	29	32
Investigations	2,771	2,771	2,771	2,771	2,771	2,771
Description: Total number of investigations conducted.						
Man hours of monitoring and inspections	12,500	12,500	12,500	12,500	12,500	12,500
Description: Total number of hours spent on inspections and monitoring.						
Man hours of Outreach	10,000	10,000	10,000	10,000	10,000	10,000
Description: Total number of hours conducting outreach activities						
Observers/Training						
Percentage of Fish Stocks with Adequate Population Assessments and Forecasts (17b)	60.4%	59.1%	57.8%	57.0%	55.7%	54.8%
Description: This is a component of the NMFS GPRA Measure: Percentage of Living Marine Resources (LMR) with Adequate Population Assessments and Forecasts – fish stocks only.						
Fisheries observed at adequate coverage levels	23	23	23	23	23	23
Description: Total number of fisheries with that are observed with adequate coverage as defined in the Fishery Management Plan						
Number of sea days observed	65,000	65,000	65,000	65,000	65,000	65,000
Description: These values represent the total number of sea days observed. Some sea days are industry funded, however, they still rely on federal funding to occur, and should thus be included in performance tracking, as is the case in the NMFS Annual Operating Plan.						

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PROGRAM CHANGES FOR FY 2012:

Enforcement (Base Funding: 248 FTE and \$67,626,000; Program Change 0 FTE and - \$600,000): NMFS requests a decrease of \$600,000, and 0 FTE for a total of \$67,026,000 and 248 FTE for Enforcement and Surveillance. In the Consolidated Appropriations Act, 2010, Congress provided additional funds to install electronic logbooks (ELBs) on shrimp boats. This additional funding is not required in FY 2012. To date, approximately 400 offshore shrimp vessels have been equipped with ELBs under this program, and the data generated provided the core scientific basis of the new red snapper bycatch management plan. The FY 2012 President's Request provides funding to support activities that enforce laws to conserve and protect our nations' living marine resources and their natural habitat.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Marine Fisheries Service
Subactivity: Enforcement and Observers/Training

Object Class		2012 Decrease
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	<u>0</u>
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	0
25.2	Other services	-600
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	0
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	<u>-600</u>

Observers and Training (Base Funding 137 FTE, and \$42,196,000, Program Change: 0 FTE and -\$3,015,000): NOAA requests a decrease of \$3,015,000 and 0 FTE for a total of \$39,181,000 and 137 FTE for Observers and Training. In the Consolidated Appropriations Act, 2010, Congress provided an additional \$3,015,000 to supplement the Hawaiian Longline Observer Program in three fisheries; American Samoa, Hawaii Longline Pelagic Fishery Deep Set, and Hawaii Longline Shallow Set. These funds were used to increase and/or maintain coverage. The additional funding is not requested in the FY 2012 President's Budget. However, the request does include \$4,229,000 for the Hawaii Longline Observer Program which provides coverage in the Pacific, the Hawaii pelagic longline tuna fishery, the Hawaii Pelagic longline swordfish fishery and the American Samoa pelagic longline fishery. Approximately 10,000 days at sea are observed annually and data are used for catch and bycatch estimation, stock assessments, and to support research on biology of the species, factors that influence the bycatch rates, and economic factors that affect fishing behavior.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Marine Fisheries Service
Subactivity: Enforcement and Observers/Training

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	-3,015
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>-3,015</u>

APPROPRIATION: OPERATIONS, RESEARCH AND FACILITIES

SUBACTIVITY: HABITAT CONSERVATION AND RESTORATION

The goal of the Habitat Conservation and Restoration Program is to implement a habitat management program. Habitat conservation is integral to NOAA's Fisheries Management, Coral Reef Conservation, and Protected Species Programs. The Habitat Conservation and Restoration Program is committed to protecting and restoring marine, coastal, and riverine habitats that support vital ecosystem functions, including abundant living marine resources, human uses, and resilient coastal communities. The program provides the expertise regarding best available science, data analysis, monitoring, and on-the-ground restoration techniques to accomplish this work. NOAA accomplishes these actions in partnership with government agencies, the public, academia, non-governmental organizations, industry, and Tribes. Activities of the Habitat Conservation and Restoration Program directly support multiple priorities of the new National Ocean Policy.

Sustainable Habitat Management

Habitat protection activities are the first step in ensuring the long-term survival and health of fishery resources and the habitats that support them. Habitat protection is integral to ensuring healthy regional ecosystems and the host of societal benefits derived from healthy and productive marine, coastal, and riverine habitats. Marine fish depend on habitat for survival and reproduction, it is important to protect the habitats that sustain and enhance commercial and recreational fisheries. Restoring and maintaining habitat is essential for rearing both commercial and forage stocks. Sustainable habitat management integrates sound science and management expertise to influence private applicants, Federal agency policies and decision-making in the following areas:

1. Requiring passage for migratory fish past hydropower dams that block valuable habitat – Under the Federal Power Act and the Energy Policy Act of 2005, NOAA provides fish passage measures and protection, mitigation, and enhancement recommendations to address the impacts of hydropower dams on migratory fish (such as salmon) and their habitats. This mandate is closely linked to NOAA's Protected Species and Fishery Management programs.
2. Consulting with Federal agencies on the impacts of proposed actions on essential fish habitat (EFH) related to Federally managed species – The Habitat Program also coordinates agency efforts to describe and identify EFH, designate habitat areas of particular concern (HAPC), and evaluate the effects of fishing activity or proposed projects on EFH/HAPC. This work ensures that proposed Federal and state actions posing threats to marine, coastal, and riverine habitats are undertaken in a manner that prevents, minimizes, or compensates for adverse effects.

NOAA produces more than 3,000 consultations per year that provide recommendations and other measures for construction projects, applications for dredging and filling wetlands, licenses for hydroelectric power plant operation, waste discharge permits, renewable energy proposals, and other Federal funding and permit activities. NOAA's consultation work has been targeted to consider projects at a variety of different scales at the local and watershed levels. Many of the consultations are technically complicated and controversial in nature thus requiring a high level of analysis and coordination. The Program looks for opportunities to collaborate with industry sectors and regulatory agencies to establish best management practices for major activities or to expand our use of programmatic consultations on recurring threats to NOAA's trust resources.

3. Supporting Regional Fishery Management Councils and interstate commissions in developing management positions on specific projects – NOAA provides technical assistance and analysis on specific projects to the habitat, individual species, and habitat committees to support decisions that protect EFH and HAPCs. NOAA provides guidance to Fishery Management Councils to refine existing EFH designations and develops analyses and recommendations to protect priority habitat from fishing impacts.
4. Increasing overall habitat conservation awareness within Federal, state, and local agencies – NOAA works with other agencies, especially on regional partnerships such as those being established under the National Fish Habitat Action Plan (NOAA is a key partner), to increase the effectiveness of NOAA's efforts regionally and nationally. NOAA also uses its expertise to influence decisions at the watershed level, where habitat conservation successes will be the most effective. Using a regional ecosystem management approach that couples research with on-the-ground conservation in coordination with local partners to enhance habitat sustainability supports the goals of no net habitat loss, increased fish production, and resilient coastal communities.
5. Implementing a deep sea coral research and technology research program – The reauthorized Magnuson-Stevens Act allows NOAA to implement a Deep Sea Coral Research and Technology Program. This provided new discretionary authority to designate zones to protect deep sea corals identified by the program from physical damage from fishing gear. With initial funding in FY 2009 and FY 2010, NOAA implemented a program to analyze and provide scientific information needed to protect deep sea coral habitats. NOAA implemented this work in coordination with other Federal agencies, and research institutions. Three major outcomes from this work include discovering new deep-sea coral habitats, providing relevant information to Council management efforts, and supporting NOAA's comprehensive marine spatial planning work.

Fisheries Habitat Restoration

Habitat restoration is the process of re-establishing a self sustaining habitat that closely resembles a natural condition in terms of structure and function. These habitats support fish and wildlife, and human uses such as swimming, diving, boating, and recreational and commercial fishing. Coastal, marine, and riverine habitat play an essential role in the reproduction, growth, and sustainability of commercial and recreational fisheries and protected species by providing shelter, feeding, spawning, and nursery grounds for fish and wildlife. Estuaries provide habitat for more than 68 percent of America's commercial fish catch by value and for 80 percent of the recreational fish catch by weight. Habitat restoration efforts provide technical expertise and financial support for habitat restoration projects. The NOAA Restoration Center oversees activities under this line item through two programs:

1. The Community-based Restoration Program (CBRP) The CRP catalyzes partnerships at national and local levels by providing on-site technical expertise and financial support, in addition to engaging volunteers to restore coastal and estuarine fish habitat. A model for community collaboration, partnership building, and interagency cooperation, NOAA's community-based partners encourage hands-on citizen involvement in restoration projects, leading to long-term stewardship of the Nation's coastal and marine resources. The effectiveness of the program is demonstrated in its ability to build partnerships that leverage funding and emphasize volunteer involvement to restore the diverse habitats crucial to recreational and commercial fishing industries and to supporting recovery of

listed species. This highly successful national effort encourages partnerships with industry, nonprofit organizations, and state and local governments and has regularly leveraged non-federal funding to federal funds by factors of five-to-one.

2. The Open Rivers Initiative (ORI) - The ORI is a comprehensive program that provides project oversight and management, technical expertise, and funding to remove small and large dams and fish passage barriers in coastal states. ORI builds on NOAA's existing restoration capabilities to identify priority projects through merit-based competitions. More than two million dams block the passage of migratory fish in U.S. streams and rivers. While dams provide numerous benefits for modern society, they also contribute to the habitat and water quality degradation occurring in estuaries, deltas, and riverine environments. Most U.S. dams serve their intended functions, however some no longer provide the benefits for which they were built. They may provide greater watershed-level benefit to fish and communities upon their removal or bypass, which is the case for dams on the Shasta River in California and Rogue River in Oregon. ORI restores fish passage to upstream spawning and rearing habitat and conducts primary restoration at the site of barrier removal or bypass.

3. Great Lakes Habitat Restoration Program (GLHRP) – In FY 2009, NOAA launched the GLHRP to plan, implement, and fund coastal habitat restoration projects throughout the region. Much of NOAA's work in the region is focused on supporting community-identified restoration priorities in Areas of Concern (AOC), environmentally degraded areas within the Great Lakes basin. The Program strives to demonstrate meaningful, measurable, and sustainable ecological benefits to coastal and near-shore resources. This is done by addressing habitat beneficial use impairments, such as loss of fish and wildlife habitat, degraded fish and wildlife populations, degraded benthos, and restrictions on fish and wildlife consumption.

Schedule & Milestones:

	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16
Conduct over 3,000 required project consultations each year to protect EFH	X	X	X	X	X	X
Work with 10 coastal and marine Fish Habitat Partnerships to develop and implement strategic plans	X	X	X	X	X	X
Conduct deep sea coral research activities in conjunction with habitat characterization cruises	X	X	X	X	X	X
Participate licensing and license implementation for 125 hydropower projects	X	X	X	X	X	X
Develop initial management options for protecting deep coral in partnership with Fishery Management Councils and National Marine Sanctuaries		X	X	X	X	X
Develop and implement communication protocols for efforts within NOAA and with stakeholders on renewable ocean energy	X	X	X	X	X	X
Select and implement restoration projects	X	X	X	X	X	X
Evaluate a sub-set of projects for mid- and		X	X	X	X	X

	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16
long-term outcomes						
Develop and select strategic national restoration partnerships			X			X

Deliverables/Outputs:

- Management-driven research products to better understand how deep-sea corals function as habitat for fish and invertebrates (FY 2012-2016).
- Accurate deep-sea coral habitat distribution maps that allow managers to better protect these biologically-rich ecosystems. (FY 2012-2016).
- Improved assessments of potential fisheries impacts to deep-sea coral habitats. (FY 2012-2016).
- Subset of habitat restoration projects evaluated, through collaboration with NMFS' Ecosystem Assessment Program, for outcome-based metrics. (FY 2012-2016).
- Increased presence of target migratory fish species. (FY 2012-2016).
- Technical guidance and assistance provided to NOAA partners, federal action agencies, and resource decision makers to achieve protection and restoration of NOAA trust resources. (FY 2012-2016).

Performance Goals and Measurement Data

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Number of Habitat Acres Restored (Annually) (17f)	77,888	80,232	82,375	77,375	72,375	67,375
<i>Habitat acres</i>	4,000	4,225	4,375	4,375	4,375	4,375
<i>ARRA acres</i>	4,888	2,007				
<i>PCSRF acres (targets from FY10)</i>	69,000	74,000	78,000	73,000	68,000	63,000
Description: NOAA restores habitat areas lost or degraded as a result of development and other human activities, as well as specific pollution incidents and sources. Activities are geared toward NOAA trust resources found across the marine environment, including the Great Lakes region, and supportive of anadromous fish species. The intent of this measure is to summarize or project the geographic area over which ecosystem function has been or will be improved as the direct result of habitat restoration efforts. Note: FY 2011 and FY 2012 include projects funded through the American Reinvestment and Recovery Act.						
Stream miles made accessible (Annually)	1,245	1,024	1,080	1,040	990	940
<i>Habitat stream miles</i>	300	310	330	330	330	330
<i>ARRA stream miles</i>	275	4				
<i>PCSRF stream miles (targets from FY10)</i>	670	710	750	710	660	610
Description: This performance measure counts stream miles made accessible as a result of Habitat Program activities. Stream miles made accessible in this context will include barrier removal and fish passage projects that support recovery of listed species. Note: FY 2011 and FY 2012 include projects funded through the American Reinvestment and Recovery Act.						

PROGRAM CHANGES FOR FY 2012:

Fisheries Habitat Restoration: Community Based Restoration Program (Base Funding: 54 FTE and \$18,823,000; Program Change 0 FTE and +\$5,044,000):

NOAA requests an increase of 0 FTE and \$5,044,000 for a total of 0 FTE and \$23,867,000 for Community Based Restoration Programs to implement larger-scale ecological restoration to benefit threatened and endangered species. NOAA will focus on increasing habitat to support recovery of listed species by reversing the loss of coastal wetlands that provide spawning and rearing habitat, improving hydrological function of coastal wetlands, and restoring the ecological functions of our rivers. The requested funding will be used to support 1-2 high priority mid-scale projects that are larger, more complex and costly than a traditional Community Based Restoration Program project, but will achieve significant benefits for threatened and endangered species. The requested funding will advance national priorities for larger-scale habitat restoration and strengthen NOAA's leadership role in science-based conservation.

Proposed Actions

- Target coastal and marine habitat conservation investments on larger-scale restoration projects in priority coastal, marine and estuarine areas to achieve regionally significant ecological restoration benefiting listed species.
- Advance priority restoration strategies for furthering protected species conservation through:
 - River restoration – improving ecological function of rivers through riparian restoration
 - Wetlands restoration – restoring natural hydrology to improve habitat condition at the watershed-scale
 - Fish passage – remove barriers to improve trends in listed and migratory species populations and their prey.

Statement of Need and Economic Benefits

Habitat destruction, degradation, and modification are a threat to endangered and threatened species populations and a major factor limiting recovery of these populations. With the requested increase, NOAA can support recovery efforts for listed species by improving habitat condition and ecosystem function through larger-scale habitat restoration in targeted areas. NOAA will capitalize on its experience implementing larger-scale habitat restoration projects gained through the American Recovery and Reinvestment Act (ARRA), and further strengthen its leadership role in science-based habitat conservation.

Coastal areas are tremendous economic resources, generating more than 28 million jobs in the United States. Commercial and recreational saltwater fishing generates \$185 billion in sales to the nation's economy (*Fisheries Economics of the U.S., 2006*). Approximately 75 percent of commercial and recreational fish species depend on the coasts for their primary habitat, spawning grounds, and nursery areas. Large-scale restoration efforts also help protect communities and infrastructure to improve coastal resiliency to storms and flooding, increase habitat connectivity and migratory corridors for fish and wildlife, and provide critical green space for public recreation and enjoyment within the most rapidly developing areas of the United States.

This funding allows NOAA to support larger-scale initiatives that address agency priorities for reducing threats that limit recovery of threatened and endangered species, restoring wetlands and opening fish passage that provide spawning and rearing habitat for fish, and helping provide storm protection from flooding and storm surge in the most vulnerable coastal

communities. These large-scale initiatives would address habitat degradation that is caused by human impacts and further exacerbated by climate change.

Base Resource Assessment:

The base resources for this activity are described in the Habitat Conservation and Restoration base narrative.

Schedule and Milestones:

	FY 12	FY 13	FY 14	FY 15	FY 16
Design and construct larger scale restoration projects benefiting listed species	X	X	X	X	X
Monitor and evaluate ecological and economic data for sub-set of projects to determine mid- and long-term outcomes		X	X	X	X
Develop and select strategic national restoration partnerships		X			X

Deliverables:

- Subset of habitat restoration projects evaluated for outcome-based metrics. (FY 2012-2016).
- Provide technical guidance and assistance to NOAA partners, federal action agencies, and resource decision makers to achieve protection and restoration of NOAA trust resources. (FY 2012-2016).

Performance Goals and Measurement Data

Performance Goal:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Number of Acres of Habitat Restored (Annually) (17f)	Target	Target	Target	Target	Target	Target
With Increase	77,888	80,457	82,750	77,750	77,750	67,750
Without Increase	77,888	80,232	82,375	77,375	77,375	67,375

Description: NOAA restores habitat areas lost or degraded as a result of development and other human activities, as well as specific pollution incidents and sources. Activities are geared toward NOAA trust resources found across the marine environment, including the Great Lakes region, and supportive of anadromous fish species. The intent of this measure is to summarize or project the geographic area over which ecosystem function has been or will be improved as the direct result of habitat restoration efforts. Note FY 2011 and FY 2012 include projects funded through the American Reinvestment and Recovery Act

Performance Goal:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Number of Protected Species listed as threatened, endangered, or depleted with stable or increasing population levels, Measure 17d	Target	Target	Target	Target	Target	Target
With Increase	28	30	29	29	29	33
Without Increase	28	30	29	29	29	32

Description: *With the requested increase NMFS does not anticipate seeing a change resulting from the program increase until FY 2016, due to a lag in actions that affect species.

Performance Goal:	FY	FY	FY	FY	FY	FY
Stream miles made accessible (Annually)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Increase	1,245	1,044	1,100	1,060	1,010	960
Without Increase	1,245	1,024	1,080	1,040	990	940
Description: This performance measure counts stream miles made accessible as a result of Habitat Program activities. Stream miles made accessible in this context will include barrier removal and fish passage projects that support recovery of listed species. Note FY 2011 and FY 2012 include projects funded through the American Reinvestment and Recovery Act.						

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Marine Fisheries Service
Subactivity: Habitat Conservation and Restoration

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	30
22 Transportation of things	2
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	5
25.1 Advisory and assistance services	327
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	4,680
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	5,044

Fisheries Habitat Restoration: Great Lakes Habitat Restoration Program (Base funding \$1,500,000 and 0 FTEs, Program Change: -0 FTE and -\$1,500,000): NOAA requests a decrease of \$1,500,000 and 0 FTE for a total of \$0 and 0 FTE for the Great Lakes Habitat Restoration Program. The requested program decrease will replace the Great Lakes Habitat Restoration Program with the implementation of the President's Great Lakes Restoration Initiative (GLRI), administered by EPA. EPA provides NOAA with funding to implement cross-agency efforts specifically focused on habitat restoration projects. The GLRI was developed by the Obama Administration to restore and protect this national treasure. Led by Environmental Protection Agency, the GLRI invests in the region's environmental and public health through a coordinated interagency process. The GLRI builds upon NOAA's programs in the Great Lakes region. The other principal agencies involved in the GLRI are USDA, HHS, DHS, HUD, DOS, Army (Civil Works), DOI, and DOT.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Marine Fisheries Service
Subactivity: Habitat Conservation & Restoration

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	-292
25.2 Other services	-227
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	-981
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	-1,500

Fisheries Habitat Restoration: Open Rivers Initiative (Base Funding: 0 FTE and \$7,080,000; Program Change +0 FTE and -\$1,000,000): NMFS requests a decrease of \$1,000,000 for a total of \$6,080,000 and 0 FTE for the Open Rivers Initiative. In the Consolidated Appropriations Act, 2010, Congress provided an additional \$1,000,000 for the Open Rivers Program. These funds were awarded competitively to meritorious fish passage and dam removal projects. These projects will be completed with the awarded grant funds. The additional funding is not required in FY 2012 to complete any of the awarded projects. The Open Rivers Initiative provides communities with funding and technical guidance to carry out dam and barrier removal projects that restore local rivers and streams. The initiative is focused on community-driven dam and river barrier removals, with the goal of enhancing watershed health and fostering sustainable populations of migratory fish. Open Rivers Initiative projects also aim to improve public safety and enhance community vitality, while encouraging economic growth. In addition, dam and river barrier removals may be eligible for funding through the Community-based Restoration Program.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Marine Fisheries Service
Subactivity: Habitat Conservation & Restoration

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	-1,000
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	-1,000

APPROPRIATION: OPERATIONS, RESEARCH AND FACILITIES
SUBACTIVITY: OTHER ACTIVITIES SUPPORTING FISHERIES

Other Activities Supporting Fisheries includes items that cross multiple NMFS programs. Activities funded include aquaculture, Antarctic research, climate research, computer hardware and software, cooperative research, information analysis and dissemination, the National Environmental Policy Act (NEPA), Regional Studies, and facilities maintenance.

Antarctic Research

The Antarctic Ecosystem Research Division (AERD) conducts ecosystem-based research to fulfill NOAA's mandate of providing scientific advice in support of United States policy interests related to resource management by the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), of which the U.S. is a member. This ecosystem research program, known as the U.S. Antarctic Marine Living Resources (AMLR) Program, is mandated by the U.S. AMLR Convention Act of 1984 and is NOAA's only dedicated, long-term "ecological presence" in the Antarctic, with observations extending over the last 25 years.

The objective of the U.S. AMLR Program is to understand the relative impacts of fishing, climate change, and other anthropogenic impacts on the Antarctic marine ecosystem. The program includes research to characterize oceanographic conditions (e.g., temperature and primary production) in the marine environment, estimate the biomasses of Antarctic krill and finfishes (species that have been or presently are the targets of commercial fisheries), and map the distributions of Vulnerable Marine Ecosystems (e.g., deep-water coral and sponge communities that can be destroyed by fishing gear). These aspects of the research program are conducted during annual research cruises.

The U.S. AMLR Program also includes research to monitor the reproductive successes (or failures) and foraging patterns of krill-dependent predators such as penguins and seals and to study how the production of these predators are, in turn, impacted by predation from higher-level predators such as leopard seals. These aspects of the research program are annually conducted from two field camps located in the vicinity of important krill fishing areas. Research to synthesize all field data occurs at the laboratory and includes efforts to build and implement ecosystem and stock-assessment models to advise on harvest strategies for Antarctic fisheries. Outputs from the U.S. AMLR Program include biomass estimates for commercially important species, peer-reviewed articles and other reports that increase knowledge about the Antarctic marine ecosystem and the impacts of fishing and climate change on that ecosystem, scientific advice to the U.S. delegation to CCAMLR, and representation of the U.S. to the CCAMLR Scientific Committee and its working groups.

Aquaculture

Aquaculture is a fast growing form of food production. NOAA is one of the primary agencies charged with permitting, overseeing and coordinating aquaculture activities. NOAA is at the forefront of an ongoing national effort to help the United States become more self-sufficient in the production of safe and sustainable seafood. This effort is based on sustainable commercial marine fisheries complemented by robust domestic aquaculture production. NOAA's overall aquaculture efforts are focused on: enabling a sustainable aquaculture industry to create jobs and other economic opportunities in coastal communities; creating a domestic supply to meet the nation's growing demand for seafood; establishing aquaculture as a viable technology for replenishment of important commercial, recreational, and depleted marine fisheries; and creating opportunities for the United States to engage the global aquaculture community through scientific and technological exchange. NOAA's aquaculture efforts fall into four

capabilities: legal and regulatory, research and technology transfer, outreach and education, and international engagement.

Base funds at NMFS support:

- Operations at the NOAA Aquaculture Program headquarters office (housed within NMFS) to lead and coordinate national regulatory, research, and outreach activities for sustainable marine aquaculture;
- Regional aquaculture coordinators develop synergies among NOAA's NMFS Offices, seafood inspection, National Sea Grant, state and tribal governments and agencies, and industry. (NMFS currently has regional aquaculture coordinators in place in the Northeast, Southeast, and Southwest with plans for a Northwest coordinator in FY 2011);
- Aquaculture science activities at NMFS laboratories including work on: developing sustainable aquaculture feeds, assessing and minimizing environmental impacts of shellfish and finfish aquaculture, hatchery research, disease and genetics management, stock enhancement to help restore depleted species and habitats, examining the effects of ocean acidification on shellfish and technology transfer projects.

Climate Regimes & Ecosystem Productivity

The Climate Regimes & Ecosystem Productivity Program (CREP) provides living marine resource managers with key information and predictions of how climate change and variability is impacting U.S. marine ecosystems and the resources and communities that depend on them. Currently focused in the Bering Sea and Gulf of Alaska, CREP work enhances NMFS' ability to track climate-related and other changes in these ecosystems through a network of in situ and remote observing systems. Information from the observing systems is then used in collaboration with partners to serve three key functions:

- Include climate change in ecosystem related models to improve fishery recruitment predictions and stock assessments used in fishery management decisions;
- Develop indices and assessments to track climate impacts on fisheries;
- Provide managers with information on climate-related impacts to improve management decisions for living marine resources (fisheries, protected species, habitats), and the communities that depend on them.

The CREP provides funding for the North Pacific Climate Regimes and Ecosystem Productivity (NPCREP) project. The NPCREP mission is to conduct research on climate variability and ecosystem response in the North Pacific, focusing on the productive waters of the eastern Bering Sea and western Gulf of Alaska. This program provides specific information and assessments for fishery and other decision makers including:

- Indices and assessment tools used by the North Pacific Fishery Management Council in required analyses and decisions regarding Total Allowable Catches in Alaskan marine fisheries;
- Indices for the North Pacific Marine Science Organization for use in the North Pacific Ecosystem Status Report;
- Information critical to development of climate-forced biological models that improve NMFS' recruitment predictions and stock assessments of Alaskan fisheries.

CREP also provides funds to monitor living marine resources in the Arctic and observe the impacts of Loss of Sea Ice (LOSI) on ice-dependent marine mammal in the Arctic.

- LOSI supports charter days to cover the expanded area of commercially fished stocks in the Bering Sea and surveys on ribbon seal distribution. This current program activity

expands monitoring to encompass commercially important species that have shifted northward due to climate change, outside of currently NOAA surveyed areas in the Bering Sea. It is expected that this will provide for more accurate Bering Sea stock assessments, which optimize yield and revenue from fisheries in the long run.

Computer Hardware And Software

The Computer Hardware Software line item is the sole appropriated resource available to operate and maintain the NOAA Fisheries Wide Area Network (WAN) and the NMFS IT security program. The WAN is the primary conduit for all mission critical data and enterprise applications used in support of the stewardship of commercial and recreational fishing, protection of species and their habitats, and NMFS law enforcement efforts. It provides crucial security components including firewall hardware, secured router hardware, security monitoring software and intrusion detection system software which are critical for preventing and monitoring security risks and vulnerabilities to the Fisheries network.

Cooperative Research

Cooperative research enables commercial and recreational fishermen to become involved in collecting fundamental fisheries information to support the development and evaluation of management options. Through cooperative research, industry and other stakeholders can partner with NMFS and university scientists in all phases of the research program-- planning the survey/statistical design, conducting research, analyzing data, and communicating results.

Current cooperative research activities complement existing NOAA-NMFS monitoring programs nationwide by providing access to platforms (recreational and commercial fishing vessels) widely distributed over a variety of habitats simultaneously, including areas that are not accessible to NOAA vessels. The information collected through cooperative research programs assists scientists and managers by supplementing the data currently collected through Federal research programs. This information improves the information base for single species, multi-species, and ecosystem assessment models and ultimately improves the evaluation of stock status and the management of fishery resources.

Cooperative research covers a wide range of study areas, including fishery-dependent data, species life history, conservation engineering, species abundance and distribution, habitat, and socioeconomic impacts. The agency's program selects high-level cooperative research projects nationwide through competitive grant and contract procurements, as well as cooperative agreements. The selection of these projects is done in consultation with the Councils, Commissions, and stakeholders and in accordance with research areas established in Section 318 of the reauthorized MSA.

Information Analysis And Dissemination

NMFS is mandated by the MSA to have staff with expertise in model development for population dynamics and economic trends, statistical data analyses for stock assessments, database development and data warehousing, development and data warehousing, and computer programming. In response to these mandates, the Information Analysis and Dissemination line provides the funds necessary to produce efficient tools critical to enable effective decision making.

This line supports NMFS activities to increase information quality, increase the accuracy of data analyses, increase the timeliness of information and the dissemination of those data, and increase the interoperability across data types and diverse data systems. Additionally, this line funds the maintenance of data management systems and policies that are critically needed to

support Integrated Ocean Observing Systems (IOOS), Fisheries One Stop Shop (FOSS), Data Management and Communication (DMAC) throughout NMFS, Fisheries Information Systems (FIS) and NOAA Data Management Committee (DMC) requirements for data collection, processing, dissemination, and archiving,

National Environmental Policy Act (NEPA)

This funding supports NMFS' NEPA coordinators and a staff of NEPA experts that conduct environmental impacts studies. NEPA requires Federal agencies to consider the interactions of natural and human environments by using "a systematic, interdisciplinary approach which will ensure the integrated use of the natural and social sciences ... in planning and decision-making" (NEPA §102(2)(a)). NEPA instructs Federal agencies to address the aesthetic, historic, cultural, economic, social, or health effects of regulations which may be direct, indirect, or cumulative. Consideration of the social impacts associated with fishery management measures is a growing concern of managers as fisheries experience variable participation, and are affected by declines in stocks. Base funding supports NMFS guidelines for social impact assessments that specify the following elements are utilized in the development of Fishery Management Plans (FMP) and FMP amendments:

- Information on distributional impacts, non-quantifiable considerations such as expectations and perceptions of the alternative actions, and the potential impacts of the alternatives on both small economic entities and broader communities;
- Descriptions of the ethnic character, family structure, and community organization of affected communities;
- Descriptions of the demographic characteristics of the fisheries;
- Descriptions of important organizations and businesses associated with the fisheries;
- Identification of possible mitigating measures to reduce negative impacts of management actions on communities.

NMFS Facilities Operations And Maintenance

The NMFS Facilities Operations and Maintenance line supports the lease costs for the Kodiak, Alaska facility and for the Sandy Hook, New Jersey facility. This line also funds operations and maintenance costs for the Santa Cruz, California laboratory (one of the NMFS Southwest Science Center's laboratories), and the Juneau laboratories in Alaska.

The Kodiak Fisheries Research Center (KFRC), in Kodiak, Alaska, is the primary facility for the Alaska Fisheries Science Center's Resource and Conservation Engineering Shellfish Assessment Program. The KFRC facility also provides offices and research support for other NMFS program activities including: Groundfish Assessment Program, North Pacific Groundfish Observer Program, National Marine Mammal Laboratory, and Alaska Regional Office, Sustainable Fisheries Division.

The primary mission of the Sandy Hook laboratory is to conduct ecological research for the Northeast Fisheries Science Center to improve understanding of both coastal and estuarine organisms and the effects of human activities on nearshore marine populations. Research for the Southwest Fisheries Science Center, in Santa Cruz, California, is focused on Pacific Coast groundfish and Pacific salmon. Groundfish under study include rockfishes, flatfishes, Pacific whiting, sablefish, and lingcod; salmon include Coho, Chinook, and steelhead. The Lena Point laboratory in Juneau, Alaska consists of 66,000 square feet of office and laboratory space and houses the Auke Bay Laboratories.

Marine Resources Monitoring, Assessment & Prediction Program

The Marine Resources Monitoring, Assessment, and Prediction (MARMAP) Program is a cooperative fisheries project of the South Carolina Marine Resources Research Institute (MRRRI) and NOAA Fisheries. For thirty years, the MRRRI has conducted fisheries-independent research on groundfish, reef fish, ichthyoplankton, and coastal pelagic fishes within the region between Cape Lookout, North Carolina and Cape Canaveral, Florida. The overall mission of the program has been to determine distribution, relative abundance, and critical habitat of economically and ecologically important fishes of the South Atlantic Bight (SAB) and to relate these features to environmental factors and exploitation activities. Research toward fulfilling these goals has included trawl surveys (from 6-350 m depth); ichthyoplankton surveys; location and mapping of reef habitat; sampling of reefs throughout the SAB; life history and population studies of priority species; tagging studies of commercially important species and special studies directed at specific management problems in the region. Survey work has also provided a monitoring program that has allowed the standardized sampling of fish populations over time, and development of an historical base for future comparisons of long-term trends.

Regional Studies

In FY 2009 Chesapeake Bay Studies and the Southeast Area Monitoring and Assessment Program (SEAMAP) were combined into the Regional Studies budget line.

SEAMAP: The base funding for the SEAMAP supports the collection of fishery-independent data through state, Federal, and university partnerships. Partnership arrangements are set up through cooperative agreements with the states from North Carolina through Texas, as well as the U.S. Virgin Islands and Puerto Rico. SEAMAP is composed of three components: the South Atlantic (North Carolina – Florida), the Gulf of Mexico (Florida – Texas) and the Caribbean (U.S. Virgin Islands and Puerto Rico). SEAMAP provides coordination of state and federal surveys for the collection, management and dissemination of fishery-independent data on marine resources. The data support the sustainable use of commercially and recreationally valuable finfish stocks in the southeastern United States.

State, Federal and university partners in the SEAMAP program conduct a variety of fishery-independent research surveys, including groundfish trawl surveys, plankton and larval fish surveys, shark and snapper longline surveys, and reef fish video surveys. These surveys provide a wide range of information to support regional stock assessment and management activities, including biological information on distribution, abundance, growth, mortality, and recruitment. In addition, all surveys collect environmental and habitat information that provides a broad-based ecosystem approach to survey methodology. These data are essential to support current species-specific and habitat fishery management plans, while supporting marine spatial planning and ecosystem-based management approaches.

The data provided by SEAMAP supports management activities in four Regional Fishery Management Councils; the Mid-Atlantic, South Atlantic, Gulf of Mexico and Caribbean Councils. SEAMAP data provide the basis for the majority of stock assessments conducted for managed species in these regions and is critical to current requirements to set Annual Catch Limits (ACL) for managed stocks. Data management activities include electronic data collection on all research surveys, centralization of SEAMAP data to improve accessibility, and coordination with the National Data Center to link SEAMAP data to additional environmental data such as satellite and buoy data. These activities will ensure that SEAMAP data are easily accessible to fishery managers, scientists and the general public.

Chesapeake Bay Studies: The base funding for Regional Studies–Chesapeake Bay studies supports the NOAA Chesapeake Bay Office (NCBO). NCBO is a focal point within NOAA for Chesapeake Bay initiatives and a conduit to apply NOAA’s wide range of capabilities to help address the problems and challenges of natural resource management in the Bay region. NOAA has been charged by the President under Executive Order (EO) 13508 to begin a new era of shared federal leadership in protecting and restoring the Bay. NCBO is carrying out EO tasks through enhanced focus on four key topics, fisheries, habitats, observations, and education. Organized across the Office's three primary programs; Ecosystem Science, Coastal and Living Resource Management, and Environmental Literacy, NCBO serves as a model for regional collaboration by identifying and applying NOAA’s full range of capabilities to address specific needs in the mid-Atlantic.

Schedule & Milestones:

NMFS will continue to provide the monitoring, assessments and forecasts to provide resource managers with the best available science on living marine and coastal resources, their habitats, and socio-economic conditions. Because of NOAA's increasing concern with climate change impacts, improving its ecosystem-based approaches to science and management, and increasing the number of fisheries managed at sustainable levels.

Aquaculture

- FY 2011 - Complete NOAA Aquaculture Policy; Develop a plan to implement the new NOAA Aquaculture Policy
- FY 2011-2012 – Expand domestic and international outreach efforts for sustainable aquaculture
- FY 2011-2016 – Continue and expand research on ocean acidification’s impact on shellfish aquaculture

Cooperative Research

FY2011-2016

- Issue call for cooperative research proposals for competitive grants program.

Climate Regimes and Ecosystem Productivity

FY 2011-2016

- Conduct annual Bering Sea fishery and protected species monitoring and observation surveys.
- Increase the number of Bering Sea Protected Species that have adequate survey information.
- Increase the percent of summer Bering Sea observations currently conducted on fish, shellfish, and marine mammals

Information analyses and dissemination

FY2011-2016

- Improve model development for population dynamics and economic trends
- Improve statistical data analyses for stock assessments
- Improve and expand data management, integration, integrity/quality and dissemination at regional and national levels.

Marine Resources Monitoring, Assessment, and Prediction (MARMAP)

FY 2011-2016

- Provide fishery-independent assessments of reef fish abundance and life history survey of shelf and upper slope waters from Cape Lookout, NC to Cape Canaveral, FL.

NMFS Facilities Maintenance

FY2011 -2016

- Continue to support lease, operations and maintenance costs at for facilities at Kodiak, AK, Juneau, AK, Santa Cruz, CA, and Sandy Hook, NJ, and make necessary repairs to ensure safety

Regional Studies

SEAMAP

FY 2011 - FY2016

- Update SEAMAP management plan to expand coordination activities and improve standardization of collected data.
- Conduct summer and fall SEAMAP groundfish surveys in state and Federal waters, conduct spring and fall SEAMAP plankton surveys in state and Federal waters, conduct SEAMAP inshore and offshore longline surveys, conduct spring and summer reef fish surveys in offshore waters.
- Provide fishery, habitat, biological and environmental data to Regional Fishery Management Councils for incorporation into regional species stock assessments and for development of effective fisheries and habitat management strategies.
- Continue coordination with the National Data Center for linkage of SEAMAP data to data collected via satellites, buoys and other mechanisms to provide integrated information to support marine spatial planning and ecosystem-based management activities.

Chesapeake Bay

- FY 2012-2016 – Work with state and Federal managers to identify multi-species fishery/oyster/habitat research topics
- FY 2011-2013 – Compile available data for a Chesapeake Bay spatial plan
- FY 2011, FY2013 and FY 2015 – Identify location for large scale restoration demonstration project
- FY 2011 and 2012 – Identify caged aquaculture requirements, and incentives

Deliverables/Outputs:

Antarctic Ecosystem Research

- FY 2011-2016 - Provide an ecosystem-based management of fisheries that impact krill, finfish, krill-dependent predators, and other components of the Antarctic ecosystem

Aquaculture

- FY 2011-2012 – Publish 5-year research and technology development plan for marine aquaculture
- FY 2012 -2013 – Report on progress of aquaculture training program in New England; adapt and expand the program as informed by this pilot project. If pilot shows merit, initiate at least one additional project in other region.
- FY 2011-2016 – Updates and reports on alternative feeds research
- FY 2011-2016 – Updates and reports on environmentally sound aquaculture practices (e.g., genetics and disease management; citing studies and reports)

Climate Regimes and Ecosystem Productivity

- Completely monitor commercially important fish and shellfish in the Bering Sea.
- FY 2011 - 2016 - Conduct surveys and processing studies of fish, shellfish, ice seals and whales, as well as forecasting socioeconomic impacts of loss of sea ice
- FY 2013-2016 - Provide data management support for assessing climate change impacts of Loss of Sea
- FY 2014-2016 - Increase NOAA's understanding of the threat of ocean acidification to NOAA-managed resources and dependent human communities
- FY 2011 - 2016 - Report on the foraging patterns of Bering Sea ice-dependent seals using aerial surveys and satellite telemetry and gray whales using acoustic and visual surveys in order to assess the impacts of the loss of sea ice impacts.
- FY 2011 - 2016 - Assess how changes in the distribution of seasonal sea ice are affecting the distributions of economically important fish and shellfish and ice-dependent marine mammals, enabling scientists to distinguish between changes due to commercial fisheries and those due to natural causes.

Cooperative Research

- FY 2011-2016 - All funded projects are required to produce final reports of the results and all of the associated data will be archived with the respective Science Center.

Information analyses and dissemination

- Support IOOS (Integrated Ocean Observing System); DMAC (Data Management and Communications); and NOAA DMC (Data Management Committee) requirements for data collection, processing, dissemination, archiving, and data sharing
- Improve information technology (IT) information sharing and storing capabilities within six Fisheries Science Centers and six Regional Offices.

Marine Resources Monitoring, Assessment, and Prediction (MARMAP)

- FY 2012, 2014, 2016 - Conduct reef fish assessment from Cape Lookout, North Carolina to Fort Pierce, Florida

NMFS Facilities Maintenance

FY 2011 -2016

- Maintain the effectiveness and efficiency of staff at all locations.
- Maintain safety standards and reduce risks to employees.
- Maintain operational and functional efficiency of facilities.
- Support continuance of the critical specific deliverables (i.e., outputs) of NOAA's ocean, coastal, and Great Lakes programs..

Regional Studies

SEAMAP

- FY 2011 and 16 - Update SEAMAP management plan to improve coordination and standardization of SEAMAP surveys.
- FY2011 - 2013 - Develop central data repository and improve data accessibility through coordination with the National Data Center.
- FY 2011-2016 - Provide ecosystem data to support ecosystem modeling and management activities.
- FY 2011– 2016 - Conduct all SEAMAP surveys in inshore and offshore waters and provide data to Regional Fishery Management Councils.

Chesapeake Bay

- FY 2011, 2012 - Develop standardized protocols for large scale oyster restoration projects in the Bay
- FY 2011-2016 - Administer annual competitive multi-species fishery/oyster/habitat research program

Performance Goals and Measurement Data

Performance Measures:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Percentage of Fish Stocks with Adequate Population Assessments and Forecasts (17b)	60.4%	59.1%	57.8%	57.0%	55.7%	54.8%
Description: This is a GPRA measure that tracks the percentage of priority fish stocks and for which adequate assessments are available to determine the scientific basis for supporting and evaluating the impact of living marine resource management actions.						
Number of peer reviewed multispecies research projects issued annually. (Chesapeake Bay)	0	2	5	5	5	5
Description: Total number of peer reviewed multispecies research projects in the Chesapeake Bay issued annually.						
The number of SEAMAP surveys conducted annually (SEAMAP)	25	25	25	25	25	25
Description: The total annual number of SEAMAP surveys conducted.						
Number of NMFS information assets that are to be documented in the InPort metadata repository for FY11 and the outyears (Information Analysis & Dissemination)	1,670	1,670	1,670	1,670	1,670	1,670
Description: Number of NMFS information assets that are to be documented in the InPort metadata repository.						
Scientific and Technical publications produced by the NMFS Scientific Publications Office (SPO) (Information Analysis & Dissemination)	19	19	19	19	19	19
Description: The number of Scientific and Technical publications produced by SPO.						
Number of Cooperative Research Projects Conducted Annually (Cooperative Research)	52	52	52	52	52	52
Description: The total number of Cooperative Research Projects conducted annually.						

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PROGRAM CHANGES FOR FY 2012:

Aquaculture (Base Funding: 15 FTE and \$6,125,000; Program Change: +1 FTE and +\$2,352,000): NOAA requests an increase of 1 FTE and \$2,352,000 for a total of 16 FTE and \$8,477,000 for research and development to support the NOAA/U.S. Department of Agriculture (USDA) Alternative Feeds Initiative. These funds will support NOAA's partnership with USDA in the Alternative Feeds Initiative. The goal of the initiative is to develop aquaculture feeds that require less fish meal and fish oil from marine forage fish. In turn, this will reduce fishing pressure on these species, and reduce the cost of finfish diets.

Proposed Actions:

- Work with the NMFS Fishery Finance Program and other DOC and federal agencies to transfer technology and enable expanded alternative aquaculture feeds production in the United States.
- Hire a scientist in the NOAA Fisheries Northwest Fisheries Science Center to lead NOAA's internal and external research on alternative feeds and expand alternative feeds research at the NOAA Fisheries science centers.
- Conduct a competitive grants initiative on priority alternative feed research topics.

Statement of Need and Economic Benefits

Fish meal and fish oil are important components in the feeds for many farm-raised species, from pigs and poultry to farmed fish. However, as recognized in the 2008 GAO Report "Offshore Aquaculture: Multiple Administrative and Environmental Issues in Establishing a U.S. Regulatory Framework," the growing pressure on the wild fisheries that supply the fish meal and fish oil and the relatively high cost of fish meal and fish oil make alternative feeds one of the top issues facing the aquaculture industry.

A white paper was released by NOAA and USDA for public comment in November 2010. The white paper outlines priorities for alternative protein sources and developing cost-effective alternative feeds that reduce the amount of marine fish harvested for the diets of farmed fish and shrimp. Areas of alternative feed research that show particular promise and will be key focus areas are: (1) plant-based proteins and oils (e.g., from marine algae, soy, and other plants) to replace fish meal and fish oil and (2) exploring means to recapture fish trimmings (e.g. heads and tails) from seafood processing plants to use in fish feeds.

This initiative will play a vital role in expanding alternative feeds research and transferring the technology to industry. This has two significant benefits. First, it will be less likely that forage fish stocks will be overexploited to supply the growing demand for finfish feeds. Second, it will enable economic viability of aquaculture operations. Feed costs are the highest single cost in most finfish aquaculture operations; and fish meal and fish oil prices have doubled in the past 15 years. Reducing the amount of fish meal and fish oil required in fish feeds will have dramatic economic benefits to seafood processors and the aquaculture industry. As U.S. citizens increasing eat more aquaculture seafood, studies are also needed to help maintain the human health benefits of eating seafood. In order to do this, suitable alternatives with marine nutrients are needed.

Current research has made progress in reducing the amount of fish meal and fish oil required in commercial aquaculture feed diets. NOAA and other federal agencies play a vital role in the research and the transfer of the technology to industry. The Alternative Feeds Initiative will highlight this type of ongoing research and identify new priority areas. This effort has the added

benefit of getting the most monetary value out of harvested fish. It would enhance wild stocks by conserving up to 162,000 metric tons annually of forage fish by FY 2016, and reduce the ratio of forage fish required for finfish aquaculture. It would provide seafood processing plants a source of additional revenue, especially out of season, and could potentially save jobs.

NMFS and OAR/Sea Grant will jointly respond to the four research area gaps identified in the GAO Report concerning the environmental effects of aquaculture. These gaps were: (1) alternative fish feeds, (2) best management practices to minimize environmental impacts, (3) how escaped cultured fish might impact wild stocks, and (4) disease management strategies. While NMFS will increase its support for alternative feeds research, OAR/Sea Grant will focus its \$2.7 million increase for aquaculture on the other three research gap areas through the Sea Grant Extension network and via an extramural competitive grants program. In FY 2010, NMFS also directed \$2 million for in-house research at its Northeast and Northwest Fisheries Science Centers to address a broad range of environmental issues associated with both shellfish and finfish marine aquaculture. The work of these science centers will focus on issues of concern to regulatory agencies such as appropriate siting of aquaculture facilities, aquatic animal health, and wild stock and habitat impacts.

Base Resource Assessment:

The base resources for this activity are described in the Other Activities Supporting Fisheries base narrative.

Schedule and Milestones:

	FY12	FY13	FY14	FY15	FY16
Accelerate the adoption and use of alternative protein and lipid sources in lieu of wild fish in aquaculture feeds	X	X	X	X	X
Develop cost-effective alternative feeds that maintain the human health benefits of seafood		X	X	X	X
Expand technology for capturing fish processing wastes to small lot producers and aquaculture farm scale		X	X	X	X
Reduce substantially or eliminate, where appropriate, the use of wild forage fish in the diets of farmed fish		X	X	X	X

Deliverables:

- Develop a grants program for NOAA and Non-NOAA labs to address recommendations in NOAA/USDA Future of Feeds report in FY 2012
- Establish mechanisms and processes to deliver federal R&D to industry for feeds in FY 2013
- Work with our federal partners by coordinating with USDA – ARS Aquafeeds Lab on development of extruded and life stage diets in FY 2013

Performance Goals and Measurements Data

Performance Goal:	FY	FY	FY	FY	FY	FY
Thousand metric tons of forage fish conserved*	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Increase	0	0	0	33	98	130
Without Increase	0	0	0	0	0	0

Description: Developing alternative feeds for aquaculture will reduce the amount of marine fish required to supply fishmeal diets.
 * Research and development conducted in FY 2012 will not begin having impacts until FY 2014

Performance Goal:	FY	FY	FY	FY	FY	FY
Ratio of forage fish required for finfish aquaculture *	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Increase	2.0	2.0	1.8	1.6	1.4	1.2
Without Increase	2.0	2.0	1.8	1.9	1.9	1.8

Description: This performance measure projects improvements in the “fish in to fish out” ratio – the number of kilograms of marine forage fish used as feed to grow one kilogram of aquaculture finfish. The reduction in the ratio will translate into conservation of forage fish as aquaculture facilities become less dependent on their use in feed operations and fishing pressure is reduced on these species.
 * Research and development conducted in FY 2012 will not begin having impacts until FY 2014.

PROGRAM CHANGE PERSONNEL DETAIL

Activity: National Marine Fisheries Service
 Subactivity: Other Activities Supporting Fisheries

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Fishery Biologist	Seattle, WA	ZP-4	<u>1</u>	87,306	<u>87,306</u>
Total			<u>1</u>		<u>87,306</u>
less Lapse		25%	<u>0</u>		<u>21,827</u>
Total full-time permanent			1		65,480
2011 Pay Adjustment (0%)					0
2012 Pay Adjustment 0%)					<u>0</u>
TOTAL					<u>65,480</u>

Personnel Data	Number
Full-Time Equivalent Employment	
Full-time permanent	1
Other than full-time permanent	<u>0</u>
Total	1

Authorized Positions:	
Full-time permanent	1
Other than full-time permanent	<u>0</u>
Total	1

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Marine Fisheries Service
Subactivity: Other Activities Supporting Fisheries

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$65
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	65
12 Civilian personnel benefits	20
13 Benefits for former personnel	0
21 Travel and transportation of persons	3
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	1
25.2 Other services	103
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	3
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	2,157
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	2,352

Cooperative Research (Base Funding: 30 FTE and \$11,804,000; Program Change: -13 FTE and -\$4,565,000): NOAA requests a decrease of \$4,565,000 for Cooperative Research for a total funding amount of 17 FTE and \$7,239,000 (note: an additional \$6,002,000 is provided for Cooperative Research within the National Catch Shares program: see discussion under Significant Adjustments to Base). This decrease is offset by increases in other fisheries research.

NOAA's cooperative research program will continue to support high-level projects nationwide through competitive grant and contract procurements, as well as cooperative agreements. Identifying research priorities to be addressed by cooperative research will be done in consultation with the Regional Fishery Management Councils, Interstate Fishery Commissions, and stakeholders. Of the total funding amount, \$3,000,000 will be directed toward developing environmentally friendly fishing gear.

Cooperative research leverages partnerships to maximize agency investments in science. Section 318 of the reauthorized Magnuson-Stevens Fishery Conservation and Management Act requires this program to be conducted through partnerships among federal, state, and tribal managers and scientists (including interstate fishery commissions), fishing industry participants (including use of commercial charter or recreational vessels for gathering data), and educational institutions. Cooperative research provides a means for commercial and recreational fishermen to become involved in the collection of fundamental fisheries information, such as fishery catch, index of stock abundance from surveys, and biological characteristics of stocks. Cooperative research efforts are also aimed at developing more selective fishing gears and operational practices that minimize bycatch, and for enhancement of at-sea electronic data capture systems to provide more detailed and timely data.

PROGRAM CHANGE PERSONNEL DETAIL

Activity: National Marine Fisheries Service
 Subactivity: Other Activities Supporting Fisheries

Title:	Location	Grade of Position:	Number	Annual Salary	Total Salaries
Cooperative Research Director	Narragansett, RI	ZP-4	1	(89,449)	(89,449)
Coordinator	Gloucester, MA	ZP-4	1	(89,449)	(89,449)
Specialist	Gloucester, MA	ZP-2	1	(44,176)	(44,176)
Support	Narragansett, RI	ZA-2	1	(42,406)	(42,406)
Coop Res - OMI -Grants FPO	Woods Hole, MA	ZA-3	1	(62,758)	(62,758)
Technicians	Woods Hole, MA	ZP-3	3	(62,758)	(188,274)
Coop Res -Data Mgmt Support	Woods Hole, MA	ZP-3	2	(62,758)	(125,516)
Coop Res - Fisheries Res					
Biologist	Woods Hole, MA	ZP-3	1	(62,758)	(62,758)
Coop Res - Fisheries Res					
Biologist	Woods Hole, MA	ZT-2	2	(34,234)	(68,468)
Total			13		(773,254)
less Lapse		25%	N/A		<u>0</u>
Total full-time permanent (FTE)			13		(773,254)
2011 Pay Adjustment (0%)					N/A
TOTAL					(773,254)

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	13
Other than full-time permanent	<u>0</u>
Total	13
Authorized Positions:	
Full-time permanent	13
Other than full-time permanent	<u>0</u>
Total	13

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Marine Fisheries Service
Subactivity: Other Activities Supporting Fisheries

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	-\$773
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	-773
12 Civilian personnel benefits	-231
13 Benefits for former personnel	0
21 Travel and transportation of persons	-44
22 Transportation of things	-7
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	-57
24 Printing and reproduction	0
25.1 Advisory and assistance services	-100
25.2 Other services	-2,655
25.3 Purchases of goods & services from Gov't accounts	-390
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	-5
31 Equipment	-43
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	-260
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	-4,565

Southwest Fisheries Science Center (Base Funding: 0 FTE and \$1,000,000; Program Change: 0 FTE and -\$1,000,000): NOAA requests a planned decrease of 0 FTE and \$1,000,000 for a total of \$0 and 0 FTE related to the prior year leasing of temporary office and laboratory space in La Jolla, California.

The facility at this location is within 25 feet of an eroding 200-foot-high bluff. According to geological studies of existing cliff stability and ongoing erosion at the site, the potential exists for future slope failures that could affect the structural integrity of the buildings. Based on this information, NOAA temporarily vacated staff from two of the laboratory's four buildings into temporary leased space pending construction of a new facility. The lease for temporary relocation space began in June 2008. Occupancy of the new facility is expected to begin during FY 2012.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Marine Fisheries Service
Subactivity: Other Activities Supporting Fisheries

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	-1,000
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>-1,000</u>

Regional Studies: Chesapeake Bay Fisheries and Habitat Monitoring & Restoration (Base Funding: 12 FTE and \$2,246,000; Program Change: +\$4 FTE and +\$5,000,000): NOAA

requests an increase of \$5,000,000 and 4 FTE, for a total of \$7,246,000 and 16 FTE, to support execution of the Chesapeake Bay Executive Order (EO). In FY 2012, the funds will be used to improve the quality of NOAA's research in the Chesapeake Bay through the acquisition of new technology and infrastructure improvement projects. This funding will ensure NOAA has state-of-the-art science capacity and necessary field and laboratory equipment in place in FY 2012 in order to proceed with implementing the requirements of the EO in FY 2013 and beyond.

Proposed Actions

Habitat Characterization and Restoration (\$2.2 million)

NOAA will meet the requirements of the EO by supporting large-scale restoration projects designed to restore the ecological functions of degraded habitats in priority areas to benefit fish and wildlife. Upgraded field survey technology is critical to the success of these projects. In FY 2012, the NOAA Chesapeake Bay Office (NCBO) will procure equipment, including replacement vessels and necessary shore-side support facilities to enhance field restoration efforts in the Bay and prevent poaching of newly established oyster sanctuaries. The NCBO will also provide staff support to plan and implement habitat assessments and characterization activities.

This investment will strengthen NOAA's ability to implement new requirements from the EO, including:

- Conducting habitat assessment and characterization surveys, as well as socioeconomic and cultural analyses, to target specific Bay tributaries for large-scale restoration and special area protection. This will include benthic mapping, habitat evaluation and classification, and infaunal and water column sampling to identify areas of high habitat value for focused protection and restoration.
- Conducting tributary-specific, targeted restoration efforts in priority locations to advance native oyster populations and habitat for key living resources.
- Establishing pre- and post-restoration monitoring programs to evaluate the success, including ecological benefits of large-scale restoration projects, as well as current oyster restoration projects utilizing *in situ* mapping, diving, ecological assessments, current profiling, and sediment sampling.

These enhancements to NCBO capacity will ensure the execution of new efforts necessary to meet EO requirements in FY 2013 and beyond.

Ecosystem Assessment and Fisheries Science Integration (\$2.3 million)

NOAA is a partner in the federal-state Cooperative Oxford Laboratory (COL), located in Oxford, Maryland. NOAA will utilize its assets at the Oxford Laboratory in collaboration with state partners to develop new scientific tools, including decision support called for by the EO, to protect and restore the living resources and water quality of the Chesapeake Bay and its watershed. As outlined in the EO draft strategy, NOAA proposes to restore native oysters in 20 tributaries by the year 2020. NOAA will work with the states of Maryland and Virginia to establish a network of native oyster sanctuaries in the Bay. For these restoration and protection projects to be successful, adequate infrastructure and science capacity is critical to overcome the constraints that have limited success of oyster restoration to date, including, oyster diseases, water quality problems, insufficient oyster habitat, and losses to poaching. In FY 2012, substantial improvements will be made at COL to develop a Chesapeake Bay geospatial modeling core capability, coupled with upgrades to laboratory facilities. These improvements will ensure smarter planning and execution of future restoration projects, protect public

investments and monitor long-term success. The funding will also provide staff support for ecosystem assessment and fisheries science integration.

This investment will strengthen NOAA's ability to implement new requirements of the EO including:

- Developing an ecosystem-based science and habitat research program to fully develop the ecological connections between living resources and habitat.
- Providing support for ecosystem-based fishery management through an evaluation of health, size, trends, and distribution of key commercially and ecologically important fishery populations of species in the Chesapeake Bay.
- Identifying inconsistencies and areas of overlap in State fishery monitoring surveys; proposing methods to standardize fisheries data across jurisdictions; and conducting surveys to fill gaps in information.
- Conducting science to support the development of ecosystem-based fisheries management models and plans for priority Bay species, including blue crab, oysters, menhaden, striped bass, and alosines (e.g., herrings).
- Enhancing ecosystem-based decision support tools such as multispecies trophic and habitat models to strengthen living resource and fisheries management in the Bay.

Observations (\$500,000)

The EO requires NOAA to strengthen scientific support for decision-making to restore the Chesapeake Bay and its watershed, including expanded environmental research and monitoring and observing systems. The Chesapeake Bay Interpretive Buoy System (CBIBS) is designed to address multiple observing requirements including geophysical, biological, habitat, and climate change information. CBIBS is a state-of-the-art observing system that provides valuable information to enhance weather forecasts, marine safety bulletins, ecosystem-based modeling, climate change prediction, and fisheries models.

With this requested funding in FY 2012, NOAA will enhance operations and maintain CBIBS and will incorporate data into the Integrated Ocean Observing System regional network of observations, as well as state and federal monitoring systems in the Bay. In addition, NOAA will collect, organize, and analyze appropriate data related to the Bay and develop modeling and forecasting capabilities linking habitat characteristics.

Statement of Need and Economic Benefits

The 64,000-square-mile Chesapeake Bay watershed is the largest estuary in the Nation. It drains six states—New York, Pennsylvania, Maryland, Delaware, Virginia and West Virginia—and the District of Columbia. It provides tremendous economic value to the region as well as ecological and cultural significance. The population of the Chesapeake Bay watershed is nearly 17 million people. While the population of the region has increased by about 8 percent in the past decade, the amount of impervious surface has increased by over 40 percent. These trends have drastically altered the hydrology and natural filtering systems of the Bay, overtaking restoration and protection efforts to date with large infusions of sediment and nutrients. As a result, many of the Bay's living resources and key habitats—such as wetlands, submerged grasses, oysters, crabs, and finfish—have suffered.

Despite these challenges, the Chesapeake blue crab commercial fishery is valued at more than \$50 million per year. In Maryland alone, boating activity accounts for approximately \$2 billion per year. Furthermore, a University of Maryland study indicates that the total economic value of the Bay exceeds \$1 trillion. However, these economic benefits are offset by decline; once-

profitable industries, such as the commercial oyster fishery, have been decimated, along with a way of life for the oystermen and their families. Oyster populations are now estimated at less than one percent of their original size, having succumbed to overharvest, disease, pollution, and predation.

Current restoration and protection efforts in the Bay are widely recognized as inadequate by federal and state agencies, academics, non-governmental organizations (NGOs), and the public. Previous targets and restoration goals are not being reached, threatening the economic and ecological vitality of the region. President Obama issued Executive Order 13508, calling for a renewed Federal commitment to protect and restore the Chesapeake Bay. More support from NOAA is needed to advance habitat protection and restoration and for critical fisheries science necessary to improve our understanding of relationships between living resources and their habitats.

NCBO's field infrastructure is aging. Permanent warehouse and dockage space, as well as replacement vessels and equipment are needed to maintain and enhance field restoration and protection efforts in the Bay. The requested funding will improve our infrastructure and provide the foundation for long-term restoration and protection of the Chesapeake Bay. It will help ensure that state and national efforts to restore the bay, as called for by the EO, are directed at the most pressing needs and that adequate monitoring, research, and evaluation functions can be performed.

The increase will provide enhanced understanding of the relationships between the Bay's living resources and habitat, protection and restoration of key species and habitats of the Chesapeake Bay across jurisdictional lines, and a coordinated system of monitoring platforms distributed across the Bay.

Base Resource Assessment:

The base resources for this activity are described in the Other Activities Supporting Fisheries base narrative.

Schedule and Milestones:

- Support ongoing operation and maintenance of the Chesapeake Bay Interpretive Buoy System
- Conducting tributary-specific, targeted restoration efforts in priority locations to advance native oyster populations and habitat for key living resources.

Deliverables

- Develop an ecosystem-based science and habitat research program to fully develop the ecological connections between living resources and habitat.
- A targeted research and restoration program aimed at determining limiting factors to successful restoration of submerged aquatic vegetation (SAV; a key fisheries habitat), including applied research, plantings, reseeding, and identification of anthropogenic threats.
- Annual support for pre/post monitoring of living shorelines.
- Annual support of native oyster restoration site evaluation and post restoration monitoring.

Performance Goals and Measurement Data

Performance Measure:						
The number of decision support tools or assessments developed and utilized for ecosystem based fishery management.*						
	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	2	4	6	8	8	8
Without Increase	2	2	2	2	2	2

Description: This measure tracks the number decision support tools and assessments developed to support fisherery management plans. NOAA is working closely with Maryland and Virginia to develop ecosystem-based fishery management plans for key Bay species. Each one of these plans will rely in part on output from trophic and ecosystem-based models. The models are supported by data collected from field research initiated by NOAA and the states.
 *Improvements through the acquisition of new technology and renovations in FY 2011 will lead to performance measure increases in the out-years

Performance Measure:						
Number of acres restored in priority tributaries						
	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	0	0	30	30	30	30
Without Increase	0	0	0	0	0	0

Description: This performance measure counts acres of habitat restored as a result of Habitat Program (HAB) activities within prioritized areas throughout the Bay. Acres restored in this context will include oyster bars with new populations that persist for at least 2 years following a restoration. This directly supports the goal of restoring native oysters in 20 tributaries by 2020.

PROGRAM CHANGE PERSONNEL DETAIL

Activity: National Marine Fisheries Service
 Subactivity: Other Activities Supporting Fisheries

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Physical Scientist	Annapolis, MD	ZP-4	1	89,033	89,033
Fisheries Biologist	Annapolis, MD	ZP-3	1	62,467	62,467
Policy Specialist	Annapolis, MD	ZP-3	1	62,467	62,467
Communications Specialist	Annapolis, MD	ZP-3	1	62,467	62,467
Field Technician	Annapolis, MD	ZP-2	1	42,209	42,209
Total			<u>5</u>		<u>318,643</u>
less Lapse		25%	<u>1</u>		<u>79,661</u>
Total full-time permanent (FTE)			4		238,982
2011 Pay Adjustment (0%)					0
2012 Pay Adjustment 0%					<u>0</u>
TOTAL					238,982

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	4
Other than full-time permanent	<u>0</u>
Total	4

Authorized Positions:

Full-time permanent	5
Other than full-time permanent	<u>0</u>
Total	5

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Marine Fisheries Service
Subactivity: Other Activities Supporting Fisheries

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$239
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	239
12 Civilian personnel benefits	71
13 Benefits for former personnel	0
21 Travel and transportation of persons	55
22 Transportation of things	20
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	4
25.2 Other services	739
25.3 Purchases of goods & services from Gov't accounts	40
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	80
31 Equipment	1,155
32 Lands and structures	2,597
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	5,000

New England Fisheries Assistance (Base Funding: 0 FTE and \$9.0 million; Program Change: 0 FTE and -\$9,000,000): NOAA requests a decrease of 0 FTE and \$9,000,000 for New England Fisheries Assistance for a total of \$0 and 0 FTE. This program was established by Congress in FY 2009 to provide financial assistance to New England fisheries to help affected fisheries adjust to the requirements of Amendment 16 and NE groundfish sector startup costs. NMFS used these funds for NEPA analysis, direct support to sectors, and monitoring at-sea and dockside. These funds also helped to establish permit banks and in FY 2009 supported an expansion of a lobster gear buyback. The proposed reduction would terminate the level of funding associated with this program that would continue under an annualized FY 2011 continuing resolution. The FY 2012 President's Budget continues to support New England fisheries through stock assessments, supporting the transition to Sectors and observer coverage, as well as other activities in other budget lines of the President's request, including the National Catch Share Program.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Marine Fisheries Service
Subactivity: Other Activities Supporting Fisheries

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	-9,000
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	-9,000

Congressionally Directed Projects (Base Funding: 0 FTE and \$33,775,000; Program Change: -0 FTE and -\$33,775,000): NOAA requests a decrease of \$33,775,000 to terminate the funding level that would continue under an annualized FY 2011 continuing resolution associated with the Congressionally directed projects indentified in the Conference Report that accompanied the Consolidated Appropriations Act, 2010.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Marine Fisheries Service
Account: Operations, Research and Facilities

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	-33,775
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>-33,775</u>

APPROPRIATION: PACIFIC COAST SALMON RECOVERY

The objectives of the Pacific Coastal Salmon Recovery Fund (PCSRF) are to protect, restore, and conserve Pacific salmonids and their habitats, and to address the impacts of the Pacific Salmon Treaty Agreement between the United States and Canada. Established by Congress in FY 2000, authorized activities that may be funded under the PCSRF program are: (1) conserving salmon and steelhead populations that are listed as threatened or endangered, or identified by a State as at-risk or to be so-listed; (2) maintaining populations necessary for exercise of tribal treaty fishing rights or native subsistence fishing; and (3) conserving Pacific coastal salmon and steelhead habitat. NMFS provides funding to states and tribes of the Pacific Coast region (Washington, Oregon, California, Idaho, Nevada, and Alaska) to foster development of federal-state-tribal-local partnerships in implementing projects that restore and protect salmonid populations and their habitats. Through these partnerships federal and state-matching funds are supplemented by significant private and local contributions at the project level.

Land-use, harvest, and hatchery practices, as well as changing ocean conditions, have increased the vulnerability of salmonid populations, contributing to their decline and the listing of many populations as threatened or endangered under the Endangered Species Act (ESA). Over the course of their life cycle, salmonids require suitable habitat in main stem rivers, tributaries, coastal estuaries, wetlands, and the Pacific Ocean. A number of environmental challenges affect the survival of salmonids, including variability in ocean conditions, destruction of nearshore and freshwater habitats, and other natural and human-caused ecosystem changes.

Key accomplishments for PCSRF-funded activities include:

- PCSRF projects have restored, protected, and made accessible nearly 650,000 acres of habitat.
- Over 5,800 miles of stream have been opened by PCSRF projects since FY 2000.
- Nearly 240 million fish have been marked, which has supported efforts to gather data for improved stock identification, more accurate fish abundance estimates, and more effective management of selective fisheries on hatchery fish.

Habitat restoration activities funded by PCSRF are an important component of overall salmonid recovery efforts in the Pacific Coast. Restoration projects provide increased quality and quantity of spawning and rearing habitat from stream headwaters to coastal estuaries. Upstream restoration activities provide erosion control, enhance instream flow and stream bed conditions, and provide the habitat necessary for successful spawning and egg survival. Estuary and wetland restoration projects closer to the coast protect and improve feeding and rearing habitat used by juvenile fish as they transition from freshwater to the open ocean. PCSRF restoration projects have also removed over 1,926 barriers to fish passage along small creeks and streams, restoring access to high-quality habitat. Additionally, PCSRF habitat projects provide a number of benefits to the human community, including enhanced water quality, recreation opportunities, flood control, and coastline protection.

Over the past 11 years, the PCSRF has funded over 9,000 projects across the Pacific coast that contribute to preventing extinction and improving the status of ESA-listed species and their habitats, as well as supporting and protecting healthy populations. Projects range from single-site culvert replacement to hundreds of acres of habitat acquisition and restoration. As projects

are completed, grantees at the state and local levels are required to collect and report data for the performance metrics defined. The PCSRF program works closely with the Protected Species Research and Management program to identify salmonid critical needs and long-term recovery objectives. PCSRF, together with the NOAA Restoration Center, reflect NOAA's comprehensive effort to restore healthy and sustainable fishery resources and the ecosystems upon which they depend.

Schedule & Milestones:

- Issue *Federal Register* notice soliciting proposals for Pacific salmon recovery from states and tribes from the Pacific Coast region.
- Review Pacific salmon recovery proposals.
- Award Pacific salmon recovery grants to states and tribes from the Pacific Coast region to implement habitat restoration and recovery projects focused on improving the status of salmonid populations and their habitats.
- Annually review, evaluate, and assess the effectiveness of funded projects and programs to improve species recovery.
- Track progress, measure performance, and ensure accountability in the use of PCSRF funds.

Deliverables/Outputs:

- Enhance availability and quality of salmonid habitat.
- Improve management practices.
- Address major habitat limiting factors.
- Improve the status of ESA-listed salmonids.
- Maintain healthy salmon populations.
- Recover salmonid populations to self-sustaining levels in fully functioning ecosystems.

Performance Goals and Measurement Data

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Number of Habitat Acres Created, Protected or Restored (Habitat Conservation & Restoration, and PCSRF Programs)	77,888	80,232	82,375	77,375	72,375	67,375
Number of Habitat Acres Created, Protected or Restored (PCSRF only)	69,000	74,000	78,000	73,000	68,000	63,000
Description: The measures above track the number of habitat acres protected through the Habitat Conservation & Restoration and PCSRF, and PCSRF only.						
Number of Stream Miles Made Accessible (Habitat Conservation & Restoration, and PCSRF Programs)	1,245	1,024	1,080	1,040	990	940
Number of Stream Miles Made Accessible (PCSRF Only)	670	710	750	710	660	610
Description: The measures above track the number of made accessible through the Habitat Conservation & Restoration and PCSRF, and PCSRF only.						

FY 2012 PROGRAM CHANGES:

Pacific Coastal Salmon Recovery Fund (Base Funding: 0 FTE and \$80,000,000; Program Change: 0 FTE and -\$15,000,000): NOAA requests a decrease of \$15,000,000 and 0 FTE for the Pacific Coastal Salmon Recovery Fund for a total of 0 FTE and \$65,000,000. The FY 2012 President's Request level provides needed funding to continue engaging partners to protect, restore, and conserve Pacific salmonids and their habitats, and to address the impacts of the Pacific Salmon Treaty Agreement between the United States and Canada. Since 2000, NOAA's investment in cooperative salmon recovery efforts has restored more than 650,000 acres of habitat and opened access to over 5,800 miles of salmon and steelhead streams. Grant funding will be competitively awarded to states and tribes of the Pacific Coast region to conserve salmon and steelhead populations that are listed as threatened or endangered, or identified by a State as at-risk or to be so-listed; maintaining populations necessary for exercise of tribal treaty fishing rights or native subsistence fishing; and conserve Pacific salmon and steelhead habitat. The President's Request will continue to support projects across the Pacific coast that contribute to preventing extinction and improving the status of ESA-listed species and their habitats, as well as supporting and protecting healthy populations.

Proposed Language:

For necessary expenses associated with the restoration of Pacific salmon populations, \$65,000,000, to remain available until September 30, 2013: Provided, That of the funds provided herein the Secretary of Commerce may issue grants to the States of Washington, Oregon, Idaho, Nevada, California, and Alaska, and Federally-recognized tribes of the Columbia River and Pacific Coast (including Alaska) for projects necessary for conservation of salmon and steelhead populations that are listed as threatened or endangered, or identified by a State as at-risk to be so-listed, for maintaining populations necessary for exercise of tribal treaty fishing rights or native subsistence fishing, or for conservation of Pacific coastal salmon and steelhead habitat, based on guidelines to be developed by the Secretary of Commerce: Provided further, That all funds shall be allocated based on scientific and other merit principles and shall not be available for marketing activities: Provided further, That funds disbursed to States shall be subject to a matching requirement of funds or documented in-kind contributions of at least 33 percent of the Federal funds.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Marine Fisheries Service
Subactivity: Protected Species Research and Management

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	-15,000
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>-15,000</u>

Department of Commerce
 National Oceanic and Atmospheric Administration
 Pacific Coast Salmon Recovery
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	Positions	FTE	Appropriation	Budget Authority	Direct Obligations
FY 2011 Annualized Continuing Resolution	0	0	80,000	80,000	80,008
less: Prior year obligations	0	0	0	0	(8)
less: Terminations	0	0	0	0	0
plus: 2012 Adjustments to Base	0	0	0	0	0
FY 2012 Base	0	0	80,000	80,000	80,000
plus: 2012 Program Changes	0	0	(15,000)	(15,000)	(15,000)
FY 2012 Estimate	0	0	65,000	65,000	65,000

Comparison by activity/subactivity		FY 2010 Actuals Personnel Amount	FY 2011 Currently Available Personnel Amount	FY 2012 Base Program Personnel Amount	FY 2012 Estimate Personnel Amount	Increase/ Decrease Personnel Amount
Pacific Coastal Salmon Recovery Account	Pos/BA	0 79,920	0 80,000	0 80,000	0 65,000	0 (15,000)
	FTE/OBL	7 79,912	0 80,008	0 80,000	0 65,000	0 (15,000)
Total: Pacific Coastal Salmon Recovery Account	Pos/BA	0 79,920	0 80,000	0 80,000	0 65,000	0 (15,000)
	FTE/OBL	7 79,912	0 80,008	0 80,000	0 65,000	0 (15,000)

Department of Commerce
National Oceanic and Atmospheric Administration
Pacific Coast Salmon Recovery
SUMMARY OF RESOURCE REQUIREMENTS
(Dollar amounts in thousands)

	FY 2010		FY 2011		FY 2012		FY 2012		Increase/ Decrease	
	Actuals		Currently Available		Base Program		Estimate			
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	0	79,912	0	80,008	0	80,000	0	65,000	0	(15,000)
Total Obligations	0	79,912	0	80,008	0	80,000	0	65,000	0	(15,000)
Adjustments to Obligations:										
Unobligated balance, expiring	0	0	0	0	0	0	0	0	0	0
Unobligated balance, adj. SOY	0	0	0	(8)	0	0	0	0	0	0
Unobligated balance, adj. EOY	0	8	0	0	0	0	0	0	0	0
Total Budget Authority	0	79,920	0	80,000	0	80,000	0	65,000	0	(15,000)
Financing from Transfers and Other:										
Transfer to ORF	0	80	0	0	0	0	0	0	0	0
Net Appropriation	0	80,000	0	80,000	0	80,000	0	65,000	0	(15,000)

Department of Commerce
National Oceanic and Atmospheric Administration
Pacific Coast Salmon Recovery
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

<u>Object Class</u>	2010 Actuals	2010 Currently Available	2010 Base	2012 Estimate	Increase/ (Decrease) over 2012 Base
11 Personnel compensation					
11.1 Full-time permanent	98	0	0	0	0
11.3 Other than full-time permanent	135	0	0	0	0
11.5 Other personnel compensation	0	0	0	0	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	234	0	0	0	0
12.1 Civilian personnel benefits	32	0	0	0	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	16	0	0	0	0
22 Transportation of things	0	0	0	0	0
23.1 Rental payments to GSA	8	0	0	0	0
23.2 Rental payments to others	0	0	0	0	0
23.3 Commun., util., misc. charges	17	0	0	0	0
24 Printing and reproduction	0	0	0	0	0
25.2 Other services	112	0	0	0	0
26 Supplies and materials	24	0	0	0	0
31 Equipment	5	0	0	0	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	79,465	80,008	80,000	65,000	(15,000)
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	0	0	0	0	0
44 Refunds	0	0	0	0	0
99 Total Obligations	79,912	80,008	80,000	65,000	(15,000)

Department of Commerce
 National Oceanic and Atmospheric Administration
 Pacific Coast Salmon Recovery
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

Less prior year recoveries	0	0	0	0	0
Less unobligated balance, SOY	0	(8)	0	0	0
Plus unobligated balance, EOY	8	0	0	0	0
Unobligated Balance, expiring	0	0	0	0	0
Total Budget Authority	79,920	80,000	80,000	65,000	(15,000)

Personnel Data

Full-Time equivalent Employment:					
Full-time permanent	7	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Total	7	0	0	0	0
Authorized Positions:					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Total	0	0	0	0	0

APPROPRIATION: FISHERMEN'S CONTINGENCY FUND

The Fishermen's Contingency Fund is authorized under Section 402 of Title IV of the Outer Continental Shelf Lands Act Amendments of 1978. NOAA compensates U.S. commercial fishermen for damage or loss of fishing gear, vessels, and resulting economic loss caused by obstructions related to oil and gas exploration, development, and production in any area of the Outer Continental Shelf. The funds used to provide this compensation are derived from fees collected on an annual basis by the Secretary of the Interior from the holders of leases, exploration permits, easements, or rights-of-way in areas of the Outer Continental Shelf.

This activity is funded totally through user fees. Disbursements can be made only to the extent authorized in appropriation acts.

PROPOSED LEGISLATION:

For carrying out the provisions of Title IV of Public Law 95-372, not to exceed \$350,000, to be derived from receipts collected pursuant to that Act, to remain available until expended.

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PROGRAM CHANGES FOR FY 2012:

Fishermen's Contingency Fund (Base Funding 0 FTE and \$0; Program Change 0 FTE and \$350,000) – NOAA requests budget authority of \$350,000 for the Fishermen's Contingency Fund for the payment of claims filed by fishermen. These funds should be sufficient to cover the estimated amount of claims for FY 2012.

Proposed Actions

Title IV established the Fishermen's Contingency Fund (FCF) to compensate commercial fishermen for damage or loss caused by obstructions associated with oil and gas activities on the Outer Continental Shelf (OCS). Although FCF program funding is derived from assessments collected from oil and gas companies operating on the OCS, these funds can only be expended to the extent authorized in appropriations acts.

Statement of Need and Economic Benefits

For several years, claims have been paid with funds remaining from previous years' authorizations. Because the authorized funds have now been depleted, claims cannot be paid until funds currently on deposit in the FCF are authorized in the next available appropriations act. In total, the FCF has a balance of \$1,292,146, with only \$10,020 currently authorized as available for expenditure.

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Department of Commerce
 National Oceanic and Atmospheric Administration
 Fishermen's Contingency Fund
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2011 Annualized Continuing Resolution	1	1	0	10
plus: Obligations from prior year balances	0	0	0	(10)
plus: Other Adjustments-to-Base	0	0	0	0
FY 2011 Base	1	1	0	0
plus: 2011 Program Changes	0	0	350	350
FY 2011 Estimate	1	1	350	350

Comparison by activity/subactivity		FY 2010		FY 2011 Currently Available		FY 2012 Base Program		FY 2012 Estimate		Increase/Decrease Personnel	
		Personnel Amount	Amount	Personnel Amount	Amount	Personnel Amount	Amount	Personnel Amount	Amount	Personnel Amount	Amount
Fishermen's Contingency Fund	Pos/BA	0	0	1	0	1	0	1	350	0	350
	FTE/OBL	0	0	1	10	1	0	1	350	0	350
Total: Fishermen's Contingency Fund	Pos/BA	0	0	1	0	1	0	1	350	0	350
	FTE/OBL	0	0	1	10	1	0	1	350	0	350

Department of Commerce
National Oceanic and Atmospheric Administration
Fishermen's Contingency Fund
SUMMARY OF RESOURCE REQUIREMENTS
(Dollar amounts in thousands)

	FY 2010		FY 2011		FY 2012		FY 2012		Increase/ Decrease	
	Actuals		Currently Available		Base Program		Estimate			
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	0	0	1	10	1	0	1	350	0	350
Total Obligations	0	0	1	10	1	0	1	350	0	350
Adjustments to Obligations:										
Unobligated balance, adj. SOY	0	(10)	0	(10)	0	0	0	0	0	0
Unobligated balance, EOY	0	10	0	0	0	0	0	0	0	0
Total Budget Authority	0	0	1	0	1	0	1	350	0	350
Financing from Transfers and Other:	0	0	0	0	0	0	0	0	0	0
Net Appropriation	0	0	1	0	1	0	1	350	0	350

Department of Commerce
National Oceanic and Atmospheric Administration
Fishermen's Contingency Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

Object Class	2010 Actuals	2011 Currently Available	2012 Base	2012 Estimate	Increase/ (Decrease) over 2012 Base
Insurance claims and indemnities	0	10	0	350	350
Interest and dividends	0	0	0	0	0
Refunds	0	0	0	0	0
Total Obligations	0	10	0	350	350
Less prior year recoveries	0	0	0	0	0
Less unobligated balance, SOY	(10)	0	0	0	0
Plus unobligated balance, EOY	10	0	0	0	0
Total Budget Authority	0	10	0	350	350
Personnel Data					
Full-Time equivalent Employment:					
Full-time permanent	0	1	1	1	0
Other than full-time permanent	0	0	0	0	0
Total	0	1	1	1	0
Authorized Positions:					
Full-time permanent	0	1	1	1	0
Other than full-time permanent	0	0	0	0	0
Total	0	1	1	1	0

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APPROPRIATION: FOREIGN FISHING OBSERVER FUND

The Foreign Fishing Observer Fund is financed through fees collected from owners and operators of foreign fishing vessels fishing within the U.S. EEZ (such fishing requires a permit issued under the Magnuson-Stevens Act). This includes longline vessels fishing in the Atlantic billfish and shark fishery and other foreign vessels fishing in the EEZ. The fund is used by NOAA to pay salaries, administrative costs, data editing and entry costs, and other costs incurred in placing observers aboard foreign fishing vessels. The observer program is conducted primarily through contracts with the private sector. NOAA/NMFS places these observers aboard foreign fishing vessels to monitor compliance with U.S. fishery laws and to collect fishery management data. Amounts available in the fund can be disbursed only to the extent and in amounts provided in appropriation acts.

In FY 1985 Congress approved the establishment of a supplemental observer program. The program provided that foreign vessels without federally funded observers are required to obtain the services of private contractors certified by the Secretary of Commerce.

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Department of Commerce
 National Oceanic and Atmospheric Administration
 Foreign Fishing Observer Fund
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2011 Annualized Continuing Resolution	0	0	0	0
less: Obligations from prior year balances	0	0	0	0
FY 2012 Base	0	0	0	0
plus: 2012 Program Changes	0	0	(350)	(350)
FY 2012 Estimate	0	0	(350)	(350)

Comparison by activity/subactivity		FY 2010		FY 2011		FY 2012		FY 2012		Increase/Decrease	
		Actuals Personnel Amount		Currently Available Personnel Amount		Base Program Personnel Amount		Estimate Personnel Amount		Personnel Amount	
Foreign Fishing Observer Fund	Pos/BA	0	0	0	0	0	0	0	(350)	0	(350)
	FTE/OBL	0	0	0	0	0	0	0	(350)	0	(350)
Total: Foreign Fishing Observer Fund	Pos/BA	0	0	0	0	0	0	0	(350)	0	(350)
	FTE/OBL	0	0	0	0	0	0	0	(350)	0	(350)

Department of Commerce
National Oceanic and Atmospheric Administration
Foreign Fishing Observer Fund
SUMMARY OF Financing
(Dollar amounts in thousands)

	FY 2010		FY 2011		FY 2012		FY 2012		Increase/ Decrease	
	Actuals		Currently Available		Base Program		Estimate			
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	0	0	0	0	0	0	0	0	0	0
Total Obligations	0	0	0	0	0	0	0	0	0	0
Adjustments to Obligations:										
Unobligated balance, adj. SOY	0	(522)	0	(522)	0	0	0	(522)	0	(522)
Unobligated balance, EOY	0	522	0	522	0	0	0	172	0	172
Total Budget Authority	0	0	0	0	0	0	0	(350)	0	(350)
Financing from Transfers and Other:										
Unobligated balance, rescission	0	0	0	0	0	0	0	350	0	350
Net Appropriation	0	0	0	0	0	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Foreign Fishing Observer Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

Object Class	2010 Actuals	2011 Currently Available	2012 Base	2012 Estimate	Increase/ (Decrease) over 2012 Base
11 Personnel compensation					
11.1 Full-time permanent	0	0	0	0	0
Other than full-time					
11.3 permanent	0	0	0	0	0
11.5 Other personnel compensation	0	0	0	0	0
Special personnel services					
11.8 payments	0	0	0	0	0
Total personnel					
11.9 compensation	0	0	0	0	0
Civilian personnel					
12.1 benefits	0	0	0	0	0
13 Benefits for former personnel	0	0	0	0	0
Travel and transportation of					
21 persons	0	0	0	0	0
22 Transportation of things	0	0	0	0	0
23.1 Rental payments to GSA	0	0	0	0	0
Rental payments to					
23.2 others	0	0	0	0	0
Commun., util., misc.					
23.3 charges	0	0	0	0	0
24 Printing and reproduction	0	0	0	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Foreign Fishing Observer Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

25.2	Other services	0	0	0	0	0
26	Supplies and materials	0	0	0	0	0
31	Equipment	0	0	0	0	0
32	Lands and structures	0	0	0	0	0
33	Investments and loans	0	0	0	0	0
41	Grants, subsidies and contributions	0	0	0	0	0
42	Insurance claims and indemnities	0	0	0	0	0
43	Interest and dividends	0	0	0	0	0
44	Refunds	0	0	0	0	0
99	Total Obligations	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
	Less prior year recoveries	0	0	0	0	0
	Less unobligated balance, SOY	(522)	(522)	(522)	(522)	0
	Plus unobligated balance, EOY	522	522	522	172	(350)
	Unobligated balance, rescission	0	0	0	0	0
	Total Budget Authority	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
		0	0	0	(350)	(350)

APPROPRIATION: FISHERIES FINANCE PROGRAM ACCOUNT

The Fisheries Finance Program (FFP) is a national loan program that makes long-term fixed-rate financing available to U.S. citizens who otherwise qualify for financing or refinancing of the construction, reconstruction, reconditioning, and, in some cases, the purchasing of fishing vessels, shoreside processing, aquaculture, mariculture facilities, and the purchase of individual fishing quota (IFQ). The purpose of these loans is to provide stability to at least one aspect of an otherwise volatile industry. The FFP also provides fishery-wide financing to ease the transition to sustainable fisheries through its fishing capacity reduction programs and provides financial assistance in the form of loans to fishermen who fish from small vessels and entry-level fishermen to promote stability and reduce consolidation in already rationalized fisheries. Additionally, FFP can provide loans for fisheries investments of Native American Community Development Quota groups.

The FFP operates under the authority of Title XI of the Merchant Marine Act of 1936, as amended (46 USC 53701); Section 303(a) of the Sustainable Fisheries Act amendments to the Magnuson-Stevens Act; and, from time to time FFP-specific legislation. FFP lending practices are guided by Title XI, general rules implementing Title XI (found at 50 CFR part 253, subpart B), NOAA's sustainable fisheries policy, and the practical considerations of a program that has continually not required an appropriation of loan loss subsidy under the Federal Credit Reform Act, as discussed below. The overriding guideline for all FFP financings is that they cannot contribute or be construed to contribute to an increase in existing fishing capacity.

All FFP authority is subject to the Federal Credit Reform Act of 1990 (FCRA) (2 U.S.C. 661) which requires the estimated loan losses (FCRA cost) be appropriated in cash at the time Congress authorizes annual credit ceilings. Some types of FFP loans require no FCRA subsidy appropriations because these types of loans have historically not required additional loan subsidy. However, specific loan ceilings for each type of loan authority must be included in appropriation language or other bill language regardless of the need for cash appropriations.

PROPOSED LEGISLATION:

Subject to section 502 of the Congressional Budget Act of 1974, during fiscal year 2012, obligations of direct loans may not exceed \$24,000,000 for Individual Fishing Quota loans and not to exceed \$59,000,000 for traditional direct loans as authorized by the Merchant Marine Act of 1936: Provided, That none of the funds made available under this heading may be used for direct loans for any new fishing vessel that will increase the harvesting capacity in any United States fishery.

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PROGRAM CHANGES FOR FY 2012:

Fisheries Finance Program (+0 FTE and +\$0): NMFS requests no increase for the Fisheries Finance Program (FFP) Account; only an annual authorization of the loan ceiling is required. No funds are necessary in the FY 2012 budget proposal because the two loan authorities included in the request have an estimated negative subsidy rate. Under the Federal Credit Reform Act (FCRA), both the historic FFP Individual Fishery Quota (IFQ) lending and FFP traditional lending activity have low levels of default, which resulted in negative subsidy rates as calculated under FCRA. When a loan program has a bad performance history, it may result in a positive subsidy and a need for appropriated funds to cover the subsidy cost. Because the program's payback history is good, the subsidy rate is negative and a subsidy cost appropriation is not required to conduct lending activity.

Proposed Actions:

The FY 2012 budget proposes to increase IFQ loan authority from \$16 million to \$24 million. The increased loan authority will increase funding for the two catch share programs already authorized under IFQ— Halibut/Sablefish IFQ and the Bering Sea and Aleutian Islands king and tanner crab IFQ—and will provide loan authority for new catch share programs that will be online in FY 2012. By the end of FY 2012, up to 16 catch share programs will be online. Under MSA section 1854(d)(2), a regional Council may submit a request and the Secretary may approve use of IFQ funding to finance the acquisition of limited access privileges by fishermen who fish from small vessels, and for first-time purchases of limited access privileges in that fishery by entry-level fishermen. Currently, NMFS has no loan authority to finance entry into additional catch share programs. This increase would be consistent with the FY 2010 congressional action, which increased the IFQ loan authority to \$16 million. NMFS plans to initially reserve \$8 million to each of the two fisheries currently authorized to receive IFQ loan funding. The additional \$8 million in loan authority will be used where needed for the existing IFQ loan fisheries or to fund entry into the new catch share programs.

In addition to the financing and refinancing of IFQ, the FFP provides long-term financing and refinancing for fisheries facilities and aquaculture facilities, and under varying conditions for fishing vessels (FFP traditional lending). The FFP governing rule prohibits lending for vessel construction or reconstruction that materially increases harvesting capacity. The purpose of these loans is to provide stability to at least one aspect of an otherwise volatile industry. Historically, the FFP traditional lending has received an annual authorized credit ceiling of \$59 million. This lending authority has benefited highly qualified fisheries businesses in the seafood processing, harvesting, and aquaculture sectors.

Statement of Need and Economic Benefits:

These loan programs support the agency's mission by helping to sustain the vital economic benefits we derive from our marine resources. Major benefits will accrue from this action. First, the IFQ loan program is part of the Northwest Halibut and Sablefish and BSAI Crab limited entry fisheries management program that continues to stabilize these fisheries. Catch share programs manage fisheries on a sustainable basis. The loan program supports sustainable fisheries management by providing financing for the participants to enter and depart fisheries. Expansion of the loan program to new catch share fisheries helps fishermen purchase catch share quota, facilitates entry to the fishery, and alleviates some financing difficulties for entry-level fishermen. The willingness of private markets to finance catch share purchases in any fishery can be limited, since volatility of fish stocks can make shares a risky asset.

The availability of these loan tools allows NOAA to work with the industry and help them continue their operations during difficult periods of reduced catch caused by natural events or fisheries management requirements. Also, financing of foreclosure assets requires the use of loan authority. Traditional FFP direct loan financing has offered the fishing industry slightly better interest rates and longer-term loans than are available elsewhere. The FFP issues long-term fixed rate loans with interest rates two percent over the U.S. Treasury's cost of funds, with loan maturities up to 25 years. The longer term allows the industry to amortize their capital investment over the actual economic life of the fisheries asset. Lower debt service reduces economic pressure, thus allowing the borrower to more easily accommodate more restrictive fishery management initiatives, all of which supports fishing communities and the businesses that support them.

Assuming the FY 2012 President's Request loan subsidy rate for IFQ loans of -12.8 percent, a loan authority of \$24 million for IFQ loans will result in a subsidy cost of -\$3,072,000, a change from the FY 2011 Continuing Resolution level of -\$2,440,000. This change in loan subsidy will result in a total Fisheries Finance Program subsidy of -\$11,196,300.

Base Resource Assessment:

The base program includes loan authority of \$16 million for IFQ loans. This level of loan authority is sufficient for two catch shares—Halibut/Sablefish IFQ and Bering Sea and Aleutian Islands king and tanner crab—but is not sufficient to support additional catch shares. The IFQ loan program, originated in 1998, and has not experienced a default.

Schedule and Milestones:

Loans to fisherman commercial fishing and aquaculture participants will be provided on an annual basis.

Deliverables:

Provide loans to small vessel and entry level fishery at favorable terms to assist in purchasing IFQ quota.

Performance Goals and Measurement Data

Performance Measure: Number of IFQ loans for small vessel and entry level fishermen	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	40	74	74	74	74	74
Without Increase	40	37	37	37	37	37
Description: The number of loans assumes an average FY 2010 loan amount of \$322,535.						

Department of Commerce
 National Oceanic and Atmospheric Administration
 Fisheries Finance Program Account
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2011 Annualized Continuing Resolution	0	0	9,910	9,910
less: 2012 Adjustments to Base	0	0	(9,910)	(9,910)
less: Negative Subsidy Receipts Adjustment	0	0	0	0
FY 2012 Base	0	0	0	0
plus: 2012 Program Changes	0	0	0	0
FY 2011 Estimate	0	0	0	0

Comparison by activity/subactivity		FY 2010		FY 2011		FY 2012		FY 2012		Increase/Decrease	
		Actuals Personnel Amount		Currently Available Personnel Amount		Base Program Personnel Amount		Estimate Personnel Amount		Personnel Amount	
Fisheries Finance Program Account	Pos/BA	0	5,744	0	9,910	0	0	0	0	0	0
	FTE/OBL	0	5,744	0	9,910	0	0	0	0	0	0
Total: Fisheries Finance Program Account	Pos/BA	0	5,744	0	9,910	0	0	0	0	0	0
	FTE/OBL	0	5,744	0	9,910	0	0	0	0	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Fisheries Finance Program Account
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	FY 2010		FY 2011		FY 2012		FY 2012		Increase/ Decrease	
	Actuals		Currently Available		Base Program		Estimate			
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Cost Loan Subsidy	0	0	0	0	0	0	0	0	0	0
Credit Reestimates	0	5,744	0	9,910	0	0	0	0	0	0
Total Obligations	0	5,744	0	9,910	0	0	0	0	0	0
Adjustments to Obligations:										
Unobligated balance, adj. SOY	0	(2,668)	0	(2,668)	0	(2,668)	0	(2,668)	0	0
Unobligated balance, EOY	0	2,668	0	2,668	0	2,668	0	2,668	0	0
Total Budget Authority	0	5,744	0	9,910	0	0	0	0	0	0
Financing from Transfers and Other:										
Less: Permanent Indefinite Authority (Mandatory)	0	(5,744)	0	(9,910)	0	0	0	0	0	0
Net Appropriation	0	0	0	0	0	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Fisheries Finance Program Account
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

<u>Object Class</u>	2010 Actuals	2010 Currently Available	2010 Base	2012 Estimate	Increase/ (Decrease) over 2012 Base
Personnel compensation					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Other personnel compensation	0	0	0	0	0
Special personnel services payments	0	0	0	0	0
Total personnel compensation	0	0	0	0	0
Civilian personnel benefits	0	0	0	0	0
Benefits for former personnel	0	0	0	0	0
Travel and transportation of persons	0	0	0	0	0
Transportation of things	0	0	0	0	0
Rental payments to GSA	0	0	0	0	0
Rental payments to others	0	0	0	0	0
Commun., util., misc. charges	0	0	0	0	0
Printing and reproduction	0	0	0	0	0
Other services	0	0	0	0	0
Supplies and materials	0	0	0	0	0
Equipment	0	0	0	0	0
Lands and structures	0	0	0	0	0
Investments and loans	0	0	0	0	0
Grants, subsidies and contributions	5,744	9,910	0	0	0
Insurance claims and indemnities	0	0	0	0	0
Interest and dividends	0	0	0	0	0
Refunds	0	0	0	0	0
Total Obligations	5,744	9,910	0	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Fisheries Finance Program Account
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

Less prior year recoveries	0	0	0	0	0
Less unobligated balance, SOY	(2,668)	(2,668)	(2,668)	(2,668)	0
Plus unobligated balance, EOY	2,668	2,668	2,668	2,668	0
Unoblig Balance, Transfer to ORF	0	0	0	0	0
Total Budget Authority	5,744	9,910	0	0	0

Personnel Data

Full-Time equivalent Employment:					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Total	0	0	0	0	0
Authorized Positions:					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Total	0	0	0	0	0

APPROPRIATION: PROMOTE AND DEVELOP FISHERIES PRODUCTS

The American Fisheries Promotion Act (AFPA) of 1980 amended the Saltonstall-Kennedy (S-K) Act to authorize a grants program for fisheries research and development projects to be carried out with S-K funds. S-K funds are derived from a transfer from the Department of Agriculture to NOAA from duties on imported fisheries products. An amount equal to 30% of these duties is made available to NOAA and, subject to appropriation, is available to carry out the purposes of the AFPA. The S-K grants program has provided substantial assistance to address impediments to the management, development, and utilization of the Nation's living marine resources. Each year a *Federal Register* notice is published announcing the program. The annual notice outlines priority areas, such as research on reduction/elimination of bycatch and aquaculture. The remainder of the S-K funds transferred is used to offset the appropriation requirements of the Operations, Research, and Facilities account.

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Department of Commerce
 National Oceanic and Atmospheric Administration
 Promote and Develop Fisheries Products
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2011 Annualized Continuing Resolution	4	4	0	0
less: Obligations from prior year balances	0	0	0	0
plus: 2012 Adjustments to Base	0	0	5,000	5,000
FY 2012 Base	4	4	5,000	5,000
plus: 2012 Program Changes	0	0	0	0
FY 2012 Estimate	4	4	5,000	5,000

Comparison by activity/subactivity		FY 2010	FY 2011	FY 2012	FY 2012	Increase/
		Actuals Personnel Amount	Currently Available Personnel Amount	Base Program Personnel Amount	Estimate Personnel Amount	Decrease Personnel Amount
Promote and Develop Fisheries Products	Pos/BA	2 8,771	4 0	4 5,000	4 5,000	0 0
	FTE/OBL	2 11,702	4 0	4 5,000	4 5,000	0 0
Total: Promote and Develop Fisheries Products	Pos/BA	2 8,771	4 0	4 5,000	4 5,000	0 0
	FTE/OBL	2 11,702	4 0	4 5,000	4 5,000	0 0

Department of Commerce
National Oceanic and Atmospheric Administration
Promote and Develop Fisheries Products
SUMMARY OF RESOURCE REQUIREMENTS
(Dollar amounts in thousands)

	FY 2010		FY 2011		FY 2012		FY 2012		Increase/ Decrease	
	Actuals		Currently Available		Base Program		Estimate			
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	4	11,702	4	0	4	5,000	4	5,000	0	0
Total Obligations	4	11,702	4	0	4	5,000	4	5,000	0	0
Adjustments to Obligations:										
Unobligated balance, adj. SOY	0	(3,243)	0	(312)	0	0	0	0	0	0
transfer of unobligated balances	0	0	0	312	0	0	0	0	0	0
Unobligated balance, adj. EOY	0	312	0	0	0	0	0	0	0	0
Total Budget Authority	4	8,771	4	0	4	5,000	4	5,000	0	0
Financing from Transfers and Other:										
Transfer from USDA		(113,371)		(68,231)		(71,200)		(71,200)		
Transfer to ORF	0	104,600		68,231	-	66,200		66,200		
Net Appropriation	4	0	4	0	4	0	4	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Promote and Develop Fisheries Products
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

<u>Object Class</u>	2010 Actuals	2011 Currently Available	2012 Base	2012 Estimate	Increase/ (Decrease) over 2012 Base
Personnel compensation					
Full-time permanent	134	0	0	0	0
Other than full-time permanent	3	0	0	0	0
Other personnel compensation	0	0	0	0	0
Special personnel services payments	0	0	0	0	0
Total personnel compensation	137	0	0	0	0
Civilian personnel benefits	0	0	0	0	0
Benefits for former personnel	31	0	0	0	0
Travel and transportation of persons	59	0	0	0	0
Transportation of things	3	0	0	0	0
Rental payments to GSA	0	0	0	0	0
Rental payments to others	0	0	0	0	0
Commun., util., misc. charges	0	0	0	0	0
Printing and reproduction	0	0	0	0	0
Other services	2,846	0	0	0	0
Supplies and materials	296	0	0	0	0
Equipment	80	0	0	0	0
Lands and structures	0	0	0	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Promote and Develop Fisheries Products
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

Investments and loans	0	0	0	0	0
Grants, subsidies and contributions	8,248	0	5,000	5,000	0
Insurance claims and indemnities	0	0	0	0	0
Interest and dividends	2	0	0	0	0
Refunds	0	0	0	0	0
Total Obligations	11,702	0	5,000	5,000	0
Less prior year recoveries	0	0	0	0	0
Less unobligated balance, SOY	(3,243)	(312)	0	0	0
Plus unobligated balance, EOY	312	312	0	0	0
Total Budget Authority	8,771	0	5,000	5,000	0

Personnel Data

Full-Time equivalent Employment:

Full-time permanent	2	4	4	4	0
Other than full-time permanent	0	0	0	0	0
Total	2	4	4	4	0

Authorized Positions:

Full-time permanent	2	4	4	4	0
Other than full-time permanent	0	0	0	0	0
Total	2	4	4	4	0

APPROPRIATION: FEDERAL SHIP FINANCING FUND

The Federal Ship Financing Fund is the liquidating account necessary for the collection of premiums and fees of the loan guarantee portfolio that existed prior to FY 1992. Administrative expenses for management of the loan guarantee portfolio were charged to the Federal Ship Financing Fund prior to the enactment of the Federal Credit Reform Act of 1990. Currently administrative expenses are charged to the Operations, Research, and Facilities (ORF) account.

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Department of Commerce
 National Oceanic and Atmospheric Administration
 Federal Ship Financing Fund
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2011 Annualized Continuing Resolution	0	0	0	0
plus: 2010 Adjustments to Base	0	0	0	0
FY 2012 Base	0	0	0	0
plus: 2012 Program Changes	0	0	0	0
FY 2012 Estimate	0	0	0	0

Comparison by activity/subactivity		FY 2010		FY 2011		FY 2012		FY 2012		Increase/Decrease	
		Actuals Personnel Amount		Currently Available Personnel Amount		Base Program Personnel Amount		Estimate Personnel Amount		Personnel Amount	Personnel Amount
Federal Ship Financing Fund	Pos/BA	0	(212)	0	0	0	0	0	0	0	0
	FTE/OBL	0	1	0	0	0	0	0	0	0	0
Total: Federal Ship Financing Fund	Pos/BA	0	(212)	0	0	0	0	0	0	0	0
	FTE/OBL	0	1	0	0	0	0	0	0	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Federal Ship Financing Fund
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	FY 2010		FY 2011		FY 2012		FY 2012		Increase/ Decrease	
	Actuals		Currently Available		Base Program		Estimate			
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	0	0	0	0	0	0	0	0	0	0
Offsetting collections, mandatory	0	0	0	0	0	0	0	0	0	0
Total Obligations	0	0	0	0	0	0	0	0	0	0
Adjustments to Obligations:										
Offsetting Collections	0	(212)	0	0	0	0	0	0	0	0
Unobligated balance, adj. SOY	0	0	0	0	0	0	0	0	0	0
Unobligated balance, adj. EOY	0	0	0	0	0	0	0	0	0	0
Total Budget Authority	0	(212)	0	0	0	0	0	0	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Federal Ship Financing Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

Object Class	2010 Actuals	2011 Currently Available	2012 Base	2012 Estimate	Increase/ (Decrease) over 2012 Base
Investments and loans	0	0	0	0	0
Total Obligations	0	0	0	0	0
Less prior year recoveries	0	0	0	0	0
Less unobligated balance, SOY	0	0	0	0	0
Plus unobligated balance, EOY	0	0	0	0	0
Mandatory Appropriation	0	0	0	0	0
Less Offsetting Collections	(112)	0	0	0	0
Total Budget Authority	(112)	0	0	0	0
Personnel Data					
Full-Time equivalent Employment:					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Total	0	0	0	0	0
Authorized Positions:					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Total	0	0	0	0	0

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APPROPRIATION: ENVIRONMENTAL IMPROVEMENT & RESTORATION FUND

The Environmental Improvement & Restoration Fund (EIRF) was created by the Department of Interior and Related Agencies Appropriations Act of 1998 for the purpose of carrying out marine research activities in the North Pacific. These funds will provide grants to Federal, State, private or foreign organizations or individuals to conduct research activities on or relating to the fisheries or marine ecosystems in the North Pacific Ocean, Bering Sea, and Arctic Ocean.

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Department of Commerce
 National Oceanic and Atmospheric Administration
 Environmental Improvement Restoration Fund
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

		Positions	FTE	Budget Authority	Direct Obligations
FY 2011 Annualized Continuing Resolution	0	0	378	10,248	
less: obligations from prior year balances		0	0	0	(9,870)
plus: 2012 Adjustments to Base		0	0	0	1,089
FY 2012 Base		0	0	378	1,467
plus: 2012 Program Changes		0	0	0	0
FY 2012 Estimate		0	0	378	1,467

Comparison by activity/subactivity		FY 2010	FY 2011	FY 2012	FY 2012	Increase/
		Actuals Personnel Amount	President's Budget Personnel Amount	Base Program Personnel Amount	Estimate Personnel Amount	Decrease Personnel Amount
Environmental Improvement & Restoration Fund	Pos/BA	0 9,870	0 378	0 1,467	0 1,467	0 0
	FTE/OBL	0 9,641	0 10,248	0 1,467	0 1,467	0 0
Total: Environmental Improvement & Restoration Fund	Pos/BA	0 9,870	0 378	0 1,467	0 1,467	0 0
	FTE/OBL	0 9,641	0 10,248	0 1,467	0 1,467	0 0

Department of Commerce
National Oceanic and Atmospheric Administration
Environmental Improvement Restoration Fund
SUMMARY OF RESOURCE REQUIREMENTS
(Dollar amounts in thousands)

	FY 2010		FY 2011		FY 2012		FY 2012		Increase/ Decrease	
	Actuals		Currently Available		Base Program		Estimate			
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	0	9,641	0	10,248	0	1,467	0	1,467	0	0
Total Obligations	0	9,641	0	10,248	0	1,467	0	1,467	0	0
Adjustments to Obligations:										
Unobligated balance, adj. SOY	0	(9,641)	0	(9,870)	0	0	0	0	0	0
Unobligated balance, EOY	0	9,870	0	0	0	0	0	0	0	0
Total Budget Authority	0	9,870	0	378	0	1,467	0	1,467	0	0
Financing from Transfers and Other:										
Net Mandatory Appropriation	0	9,870	0	378	0	1,467	0	1,467	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Environmental Improvement Restoration Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

<u>Object Class</u>	2010 Actuals	2011 President's Budget	2012 Base	2012 Estimate	Increase/ (Decrease) over 2012 Base
Personnel compensation					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Other personnel compensation	0	0	0	0	0
Special personnel services payments	0	0	0	0	0
Total personnel compensation	0	0	0	0	0
Civilian personnel benefits	0	0	0	0	0
Benefits for former personnel	0	0	0	0	0
Travel and transportation of persons	0	0	0	0	0
Transportation of things	0	0	0	0	0
Rental payments to GSA	0	0	0	0	0
Rental payments to others	0	0	0	0	0
Commun., util., misc. charges	0	0	0	0	0
Printing and reproduction	0	0	0	0	0
Other services	0	0	0	0	0
Supplies and materials	0	0	0	0	0
Equipment	0	0	0	0	0
Lands and structures	0	0	0	0	0
Investments and loans	0	0	0	0	0
Grants, subsidies and contributions	9,641	10,248	1,467	1,467	0
Insurance claims and indemnities	0	0	0	0	0
Interest and dividends	0	0	0	0	0
Refunds	0	0	0	0	0
Total Obligations	9,641	10,248	1,467	1,467	0
	0	0	0	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Environmental Improvement Restoration Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

Less prior year recoveries					
Less unobligated balance, SOY	(9,641)	(9,870)	0	0	0
Plus unobligated balance, EOY	9,870	0	0	0	0
Total Budget Authority	<u>9,870</u>	<u>378</u>	<u>1,467</u>	<u>1,467</u>	<u>0</u>

APPROPRIATION: LIMITED ACCESS SYSTEM ADMINISTRATION

Under the authority of the Magnuson-Stevens Act Section 304(d)(2)(A), NMFS must collect a fee to recover the incremental costs of management, data collection, and enforcement of Limited Privilege (LAP) programs. Funds collected under this authority are deposited into the "Limited Access System Administrative Fund" (LASAF). Fees shall not exceed three percent of the ex-vessel value of fish harvested under any such program, and shall be collected at either the time of the landing, filing of a landing report, or sale of such fish during a fishing season or in the last quarter of the calendar year in which the fish is harvested. The LASAF shall be available, without appropriation or fiscal year limitation, only for the purposes of administering the central registry system; and administering and implementing the Magnuson-Stevens Act in the fishery in which the fees were collected. Sums in the fund that are not currently needed for these purposes shall be kept on deposit or invested in obligations of, or guaranteed by the U.S. Also, in establishing a LAP program, a Regional Council can consider, and may provide, if appropriate, an auction system or other program to collect royalties for the initial or any subsequent distribution of allocations. If an auction system is developed, revenues from these royalties are deposited in the Limited Access System Administration Fund.

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Department of Commerce
 National Oceanic and Atmospheric Administration
 Limited Access System Administration Fund
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2011 Annualized Continuing Resolution	0	0	8,576	20,446
ATBs			1,099	
less: Obligations from Prior Year Balances	0	0	0	(10,771)
FY 2012 Base	0	0	9,675	9,675
plus: 2012 Program				
Changes	0	0	0	0
FY 2012 Estimate	0	0	9,675	9,675

Comparison by activity/subactivity		FY 2010		FY 2011		FY 2012		FY 2012		Increase/Decrease	
		Actuals Personnel Amount		Currently Available Personnel Amount		Base Program Personnel Amount		Estimate Personnel Amount		Personnel Amount	
Limited Access System Administration Fund	Pos/BA	0	3,882	0	8,576	0	9,675	0	9,675	0	0
	FTE/OBL	0	7,291	0	20,446	0	9,675	0	9,675	0	0
Total: Limited Access System Administration Fund	Pos/BA	0	3,882	0	8,576	0	9,675	0	9,675	0	0
	FTE/OBL	0	7,291	0	20,446	0	9,675	0	9,675	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Limited Access System Administration Fund
SUMMARY OF RESOURCE REQUIREMENTS
(Dollar amounts in thousands)

	FY 2010		FY 2011		FY 2012		FY 2012		Increase/ Decrease	
	Actuals		Currently Available		Base Program		Estimate			
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	0	7,291	0	20,446	0	9,675	0	9,675	0	0
Total Obligations	0	7,291	0	20,446	0	9,675	0	9,675	0	0
Adjustments to Obligations:										
Recoveries	0	(2)	0	0	0	0	0	0	0	0
Unobligated balance, adj. SOY	0	(15,277)	0	(11,870)	0	0	0	0	0	0
Unobligated balance, EOY	0	11,870	0	0	0	0	0	0	0	0
Total Budget Authority	0	3,882	0	8,576	0	9,675	0	9,675	0	0
Financing from Transfers and Other:										
Net Appropriation	0	3,882	0	8,576	0	9,675	0	9,675	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Limited Access System Administration Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

Object Class	2010 Actuals	2011 Currently Available	2012 Base	2012 Estimate	Increase/ (Decrease) over 2012 Base
Personnel compensation					
Full-time permanent	2,364	0	0	0	0
Other than full-time permanent	5	0	0	0	0
Other personnel compensation	415	0	0	0	0
Special personnel services payments	0	0	0	0	0
Total personnel compensation	2,784	0	0	0	0
Civilian personnel benefits	1,530	0	0	0	0
Benefits for former personnel	0	0	0	0	0
Travel and transportation of persons	107	0	0	0	0
Transportation of things	4	0	0	0	0
Rental payments to GSA	0	0	0	0	0
Rental payments to others	0	0	0	0	0
Commun., util., misc. charges	417	0	0	0	0
Printing and reproduction	52	0	0	0	0
Other services	720	0	0	0	0
Purchases of goods & svcs from Govt accounts	0	0	0	0	0
Supplies and materials	79	0	0	0	0
Equipment	12	0	0	0	0
Lands and structures	0	0	0	0	0
Investments and loans	0	0	0	0	0
Grants, subsidies and contributions	1,585	20,447	9,675	9,675	0
Insurance claims and indemnities	0	0	0	0	0
Interest and dividends	0	0	0	0	0
Refunds	0	0	0	0	0
Total Obligations	7,291	20,447	9,675	9,675	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Limited Access System Administration Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

Less prior year recoveries	(3)	0	0	0	0
Less unobligated balance, SOY	(15,277)	(11,871)	0	0	0
Plus unobligated balance, EOY	11,871	0	0	0	0
Total Budget Authority	3,882	8,576	9,675	9,675	0

Personnel Data

Full-Time equivalent Employment:					
Full-time permanent	32	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Total	32	0	0	0	0
Authorized Positions:					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Total	0	0	0	0	0

APPROPRIATION: MARINE MAMMAL UNUSUAL MORTALITY EVENT FUND

An unusual mortality event (UME) is defined under the Marine Mammal Protection Act as "a stranding that is unexpected; involves a significant die-off of any marine mammal population; and demands immediate response." In recent years, increased efforts to examine carcasses and live stranded animals have improved the knowledge of mortality rates and causes, allowing a better understanding of population threats and stressors and the ability to determine when a situation is "unusual." Understanding and investigating marine mammal UMEs is important because they can serve as indicators of ocean health, giving insight into larger environmental issues which may also have implications for human health and welfare.

The Marine Mammal Protection Act Section 405 (16 USC 1421d) establishes the Marine Mammal Unusual Mortality Event Fund and describes its purposes and how donations can be made to the Fund. The fund: "shall be available only for use by the Secretary of Commerce, in consultation with the Secretary of the Interior –

- to compensate persons for special costs incurred in acting in accordance with the contingency plan issued under section 1421c(b) of this title or under the direction of an Onsite Coordinator for an unusual mortality event;
- for reimbursing any stranding network participant for costs incurred in preparing and transporting tissues collected with respect to an unusual mortality event for the Tissue Bank; and
- for care and maintenance of marine mammal seized under section 1374(c)(2)(D) of this title"

According to the MMPA, deposits can be made into Fund by the following:

- "amounts appropriated to the Fund;
- other amounts appropriated to the Secretary for use with respect to unusual mortality events; and
- amounts received by the United States in the form of gifts, devises, and bequests under subsection (d) of this section."

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Department of Commerce
 National Oceanic and Atmospheric Administration
 Marine Mammal Unusual Mortality Event Fund
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2011 Annualized Continuing Resolution	0	0	0	406
less: Obligations from prior year balances	0	0	0	(206)
FY 2012 Base	0	0	0	200
plus: 2012 Program Changes	0	0	0	0
FY 2012 Estimate	0	0	0	200

Comparison by activity/subactivity		FY 2010		FY 2011		FY 2012		FY 2012		Increase/Decrease	
		Actuals Personnel Amount		Currently Available Personnel Amount		Base Program Personnel Amount		Estimate Personnel Amount		Personnel Amount	Personnel Amount
Marine Mammal Unusual Mortality Event Fund	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	0	0	206	0	200	0	200	0	0
Total: Marine Mammal Unusual Mortality Event Fund	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	0	0	206	0	200	0	200	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Marine Mammal Unusual Mortality Event Fund
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	FY 2010		FY 2011		FY 2012		FY 2012		Increase/ Decrease	
	Actuals		Currently Available		Base Program		Estimate			
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	0	0	0	206	0	200	0	200	0	0
Total Obligations	0	0	0	206	0	200	0	200	0	0
Adjustments to Obligations:										
Unobligated balance, adj. SOY	0	(406)	0	(406)	0	(200)	0	(200)	0	0
Unobligated balance, EOY	0	406	0	200	0	0	0	0	0	0
Total Budget Authority	0	0	0	0	0	0	0	0	0	0
Financing from Transfers and Other:										
Net Appropriation	0	0	0	0	0	0	0	0	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Fisheries Conservation and Management Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

Object Class	2010 Actuals	2011 Currently Available	2012 Base	2012 Estimate	Increase/ (Decrease) over 2012 Base
Personnel compensation					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Other personnel compensation	0	0	0	0	0
Special personnel services payments	0	0	0	0	0
Total personnel compensation	0	0	0	0	0
Civilian personnel benefits	0	0	0	0	0
Benefits for former personnel	0	0	0	0	0
Travel and transportation of persons	0	0	0	0	0
Transportation of things	0	0	0	0	0
Other services	0	0	0	0	0
Grants, subsidies and contributions	0	0	0	0	0
Total Obligations	0	206	200	200	0
Less prior year recoveries	0	0	0	0	0
Less unobligated balance, SOY	(406)	(206)	(200)	(200)	0
Plus unobligated balance, EOY	406	0	0	0	0
Total Budget Authority	0	0	0	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Fisheries Conservation and Management Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

Personnel Data

Full-Time equivalent Employment:

Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
<hr/>					
Total	0	0	0	0	0

Authorized Positions:

Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
<hr/>					
Total	0	0	0	0	0

APPROPRIATION: WESTERN PACIFIC SUSTAINABLE FISHERIES FUND

Section 204(e) of the 2006 amendments to the Magnuson-Stevens Fishery Conservation and Management Act authorizes the establishment of the **Western Pacific Sustainable Fisheries Fund**. **The purpose of this Fund is** to allow foreign fishing within the U.S. Exclusive Economic Zone (EEZ) in the Western Pacific through a Pacific Insular Area Fishery Agreement. Before entering into such an Agreement, the Western Pacific Fishery Management Council must develop a Marine Conservation Plan that provides details on uses for any funds collected by the Secretary of Commerce. Marine Conservation Plans must also be developed by the Governors of the Territories of Guam and American Samoa and of the Commonwealth of the Northern Mariana Islands and approved by the Secretary or designee.

The Western Pacific Sustainable Fisheries Fund serves as a repository for any permit payments received by the Secretary for foreign fishing within the U.S. EEZ around Johnston Atoll, Kingman Reef, Palmyra Atoll, and Jarvis, Howland, Baker and Wake Islands, sometimes known as the Pacific remote island areas (PRIA). Also, in the case of violations by foreign vessels occurring in these areas, amounts received by the Secretary attributable to fines and penalties shall be deposited into the Western Pacific Sustainable Fisheries Fund. Additionally, any funds or contributions received in support of conservation and management objectives under a Marine Conservation Plan for any Pacific Insular Area other than American Samoa, Guam, or the Northern Mariana Islands shall be deposited in the Western Pacific Sustainable Fisheries Fund.

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Department of Commerce
 National Oceanic and Atmospheric Administration
 Western Pacific Sustainability Fisheries Fund
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2011 Annualized Continuing Resolution	0	0	1,000	2,001
less: 2011 Obligations from prior year balances	0	0	0	(1,001)
FY 2012 Base	0	0	1,000	1,000
plus: 2012 Program Changes	0	0	0	0
FY 2012 Estimate	0	0	1,000	1,000

Comparison by activity/subactivity		FY 2010		FY 2011		FY 2012		FY 2012		Increase/Decrease	
		Actuals Personnel Amount		Currently Available Personnel Amount		Base Program Personnel Amount		Estimate Personnel Amount		Personnel Amount	Personnel Amount
Western Pacific Sustainability Fisheries Fund	Pos/BA	0	1,000	0	1,000	0	1,000	0	1,000	0	0
	FTE/OBL	0	883	0	2,001	0	1,000	0	1,000	0	0
Total: Western Pacific Sustainability Fisheries Fund	Pos/BA	0	1,000	0	1,000	0	1,000	0	1,000	0	0
	FTE/OBL	0	883	0	2,001	0	1,000	0	1,000	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Western Pacific Sustainability Fisheries Fund
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	FY 2010		FY 2011		FY 2012		FY 2012		Increase/ Decrease	
	Actuals		Currently Available		Base Program		Estimate			
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	0	883	0	2,001	0	1000	0	1000	0	0
Total Obligations	0	883	0	2001	0	1000	0	1000	0	0
Adjustments to Obligations:										
Unobligated balance, adj. SOY	0	(884)	0	(1,001)	0	0	0	0	0	0
Unobligated balance, EOY	0	1,001	0	0	0	0	0	0	0	0
Total Budget Authority	0	1,000	0	1,000	0	1,000	0	1,000	0	0
Financing from Transfers and Other:										
Net Appropriation	0	1,000	0	1,000	0	1,000	0	1,000	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
Western Pacific Sustainability Fisheries Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
(Dollar amounts in thousands)

Object Class	2010 Actuals	2011 Currently Available	2012 Base	2012 Estimate	Increase/ (Decrease) over 2012 Base
Personnel Compensation					
11.1 Full-time permanent	0	0	0	0	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	0	0	0	0	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	0	0	0	0	0
12.1 Civilian personnel benefits	0	0	0	0	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	0	0	0	0	0
22 Transportation of things	0	0	0	0	0
25.2 Other services	883	2,001	1,000	1,000	0
99 Total Obligations	883	2,001	1,000	1,000	0
Less prior year recoveries	0	0	0	0	0
Less unobligated balance, SOY	(884)	(1,001)	0	0	0
Plus unobligated balance, EOY	1,001		0	0	0
Total Budget Authority	1,000	1,000	1,000	1,000	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Western Pacific Sustainability Fisheries Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

Personnel Data

<hr/>					
Full-Time equivalent Employment:					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
	<hr/>				
Total	0	0	0	0	0
Authorized Positions:					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
	<hr/>				
Total	0	0	0	0	0

APPROPRIATION: FISHERIES ASSET FORFEITURE FUND

Section 311(e)(1) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) authorizes the Secretary of Commerce (Secretary) to pay certain enforcement-related expenses from fines, penalties and forfeiture proceeds received for violations of the Magnuson-Stevens Act, Marine Mammal Protection Act, National Marine Sanctuaries Act, or any other marine resource law enforced by the Secretary. Pursuant to this authority, the NOAA has established a Civil Monetary Penalty/Asset Forfeiture Fund (AFF). Certain fines, penalties and forfeiture proceeds received by NOAA are deposited into this Fund, and subsequently used to pay for certain enforcement-related expenses. When Congress established the AFF it was deemed appropriate to use these proceeds to offset in part the costs of administering the Enforcement program. Expenses funded through this source include: costs directly related to the storage, maintenance, and care of seized fish, vessels, or other property during a civil or criminal proceeding; expenditures relate directly to specific investigations and enforcement proceedings such as travel for interviewing witnesses; enforcement unique information technology infrastructure; annual interagency agreement and contract costs for the administrative adjudication process, including Administrative Law Judges hired by the Coast Guard.

Proposed Legislation:

Provided further, There is established in the Treasury a non-interest bearing fund to be known as the "Fisheries Enforcement Asset Forfeiture Fund", which shall consist of all sums received as fines, penalties, and forfeitures of property for violations of any provisions of 16 U.S.C. 1861 or of any other marine resource law enforced by the Secretary of Commerce, including the Lacey Act Amendments of 1981 (16 U.S.C. 3371 et seq.) and with the exception of collections pursuant to 16 U.S.C. 1437: Provided further, All unobligated balances that have been collected pursuant to 16 U.S.C. 1861 or any other marine resource law enforced by the Secretary of Commerce with the exception of 16 U.S.C. 1437 shall be transferred from the Operations, Research, and Facilities account into the Fisheries Enforcement Asset Forfeiture Fund and shall remain available until expended.

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Department of Commerce
 National Oceanic and Atmospheric Administration
 Fisheries Asset Forfeiture Fund
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

		Positions	FTE	Budget Authority	Direct Obligations
FY 2011 Annualized Continuing Resolution	0	0	0	0	0
less: 2011 Obligations from prior year balances		0	0	0	0
plus: 2012 Adjustments to base		0	0	8,000	8,000
FY 2012 Base		0	0	8,000	8,000
plus: 2012 Program Changes		0	0	0	0
FY 2012 Estimate		0	0	8,000	8,000

Comparison by activity/subactivity		FY 2010		FY 2011		FY 2012		FY 2012		Increase/	
		Actuals	Personnel	Currently	Personnel	Base	Personnel	Estimate	Personnel	Decrease	Personnel
		Amount	Amount	Available	Amount	Program	Amount	Amount	Amount	Amount	Amount
Asset Forfeiture Fund	Pos/BA	0	0	0	0	0	8,000	0	8,000	0	0
	FTE/OBL	0	0	0	0	0	8,000	0	8,000	0	0
Total: Asset Forfeiture Fund	Pos/BA	0	0	0	0	0	8,000	0	8,000	0	0
	FTE/OBL	0	0	0	0	0	8,000	0	8,000	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Fisheries Asset Forfeiture Fund
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	FY 2010		FY 2011		FY 2012		FY 2012		Increase/ Decrease	
	Actuals		Currently Available		Base Program		Estimate			
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	0	0	0	0	0	8,000	0	8,000	0	0
Total Obligations	0	0	0	0	0	8,000	0	8,000	0	0
Adjustments to Obligations:										
Unobligated balance, adj. SOY	0	0	0	0	0	0	0	0	0	0
Unobligated balance, EOY	0	0	0	0	0	0	0	0	0	0
Total Budget Authority	0	0	0	0	0	8,000	0	8,000	0	0
Financing from Transfers and Other:										
						(3,000)		(3,000)		
Net Appropriation	0	0	0	0	0	5,000	0	5,000	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Fisheries Asset Forfeiture Fund
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

Object Class	2010 Actuals	2011 Currently Available	2012 Base	2012 Estimate	Increase/ (Decrease) over 2012 Base
Travel and transportation of persons	0	0	0	0	0
Transportation of things	0	0	0	0	0
Rental payments to GSA	0	0	0	0	0
Printing and reproduction	0	0	0	0	0
Other services	0	0	8,000	8,000	0
Supplies and materials	0	0	0	0	0
Equipment	0	0	0	0	0
Interest and dividends	0	0	0	0	0
Total Obligations	0	0	8,000	8,000	0
Non-Federal Sources	0	0	0	0	0
Less prior year recoveries	0	0	0	0	0
Less unobligated balance, SOY	0	0	0	0	0
Plus unobligated balance, EOY	0	0	0	0	0
Less unobligated balance, transferred	0	0	0	0	0
Total Budget Authority	0	0	8,000	8,000	0
Personnel Data					
Full-Time equivalent Employment:					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Total	0	0	0	0	0
Authorized Positions:					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Total	0	0	0	0	0

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BUDGET ACTIVITY: OCEANIC AND ATMOSPHERIC RESEARCH

For FY 2012, NOAA requests a net decrease of \$11,233,000 and an increase of 4 FTE over the FY 2010 enacted level, after the technical transfer of programs to the new Climate Service, for a total of \$212,013,000 and 472 FTE for the Office of Oceanic and Atmospheric Research (OAR). This increase includes \$2,768,000 in inflationary adjustments. The technical transfer proposed for the creation of the new Climate Service line office includes \$225,899,000 and 276 FTE associated with the Climate Program Office, the Geophysical Fluid Dynamics Laboratory, and components of the Earth System Research Laboratory (ESRL), including the Chemical Sciences Division, Physical Sciences Division, and Global Monitoring Division.

As part of an effort to strengthen science along with the reorganization, NOAA will look to OAR to play an expanded role as the incubator and integrator of science and technology across NOAA. The agency will rely on OAR to coordinate and develop such emerging and integrative subjects as ocean acidification, renewable energy, “warn on forecast,” unmanned aircraft systems and autonomous underwater vehicles, and emphasize areas that are important challenges for NOAA, such as ecosystem science beyond the scope of fisheries-related applications. OAR will also serve as a programmatic lead for environmental modeling as we move to truly integrated modeling that spans the full domain of physical, chemical, and biological. When mature, the products or activities of these subjects will transition to another Line Office for operation or application.

BASE JUSTIFICATION FOR FY 2012:

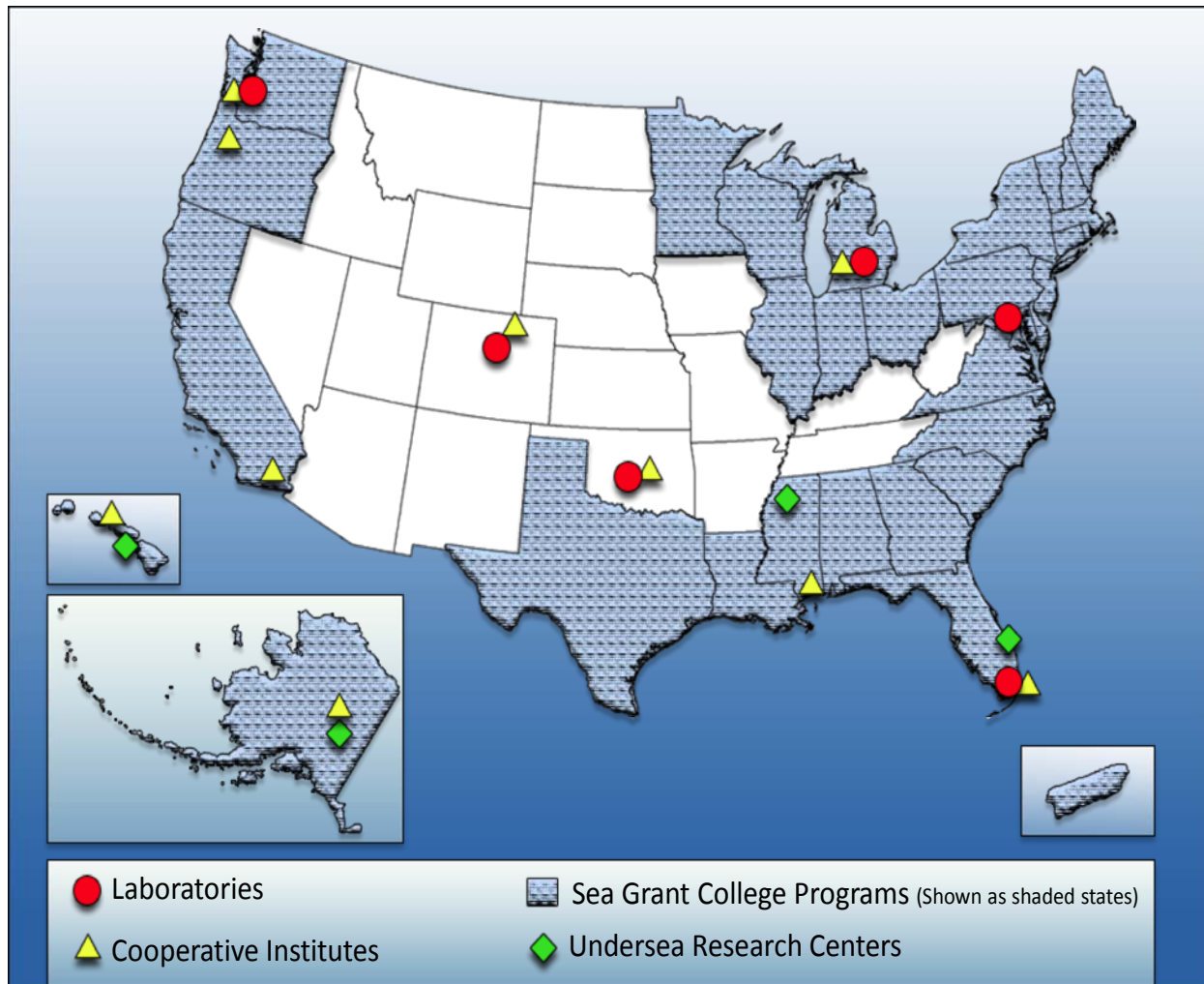
The OAR base budget (\$227,514,000 and 469 FTE) is organized into 4 subactivities under the Operations, Research, and Facilities account:

- Climate Research (\$22,182,000 and 110 FTE) includes interdisciplinary Laboratories and Cooperative Institutes that provide a unique OAR climate role via Earth systems modeling; improve observing and monitoring systems essential for climate, oceanographic, and ecosystems research, monitoring and data management; and advance research capabilities for seasonal, interannual, and longer-term climate variability.
- Weather and Air Quality Research (\$50,647,000 and 183 FTE) includes Laboratories and Cooperative Institutes and Weather and Air Quality Research Programs that develops improved understanding and forecast capabilities for atmospheric events that endanger lives and property;
- Ocean, Coastal, and Great Lakes Research (\$121,972,000 and 163 FTE) includes Laboratories and Cooperative Institutes, the National Sea Grant College Program, Ocean Exploration and Research, and Other Ecosystem Programs, which develop innovative management tools through a better understanding of habitats, processes, and resources;
- Information Technology Research & Development (\$13,213,000 and 13 FTE) includes High Performance Computing Initiatives, which seek to accelerate the adoption of advanced computing, communications, and information technology throughout NOAA.

OAR conducts research and development relevant to NOAA's mission. OAR operates through a national network of laboratories and other university-based research programs. OAR manages its budget through five organizational components: Laboratories and Cooperative Institutes, National Sea Grant College Program, Office of Ocean Exploration and Research (OER), Office of Weather & Air Quality, and the NOAA High-Performance Computing and Communications Program.

OAR Laboratories and Cooperative Institutes

OAR has six laboratories across the United States that administer and manage research programs, emphasize theoretical and analytical studies, and conduct laboratory experiments and field observations. These laboratories collaborate with numerous external partners, including NOAA-funded cooperative institutes. The primary purposes of the laboratories and cooperative institutes are to improve NOAA products and services and to provide the basis for improved decision making by policy makers and the public.



Research Laboratories

- **Air Resources Laboratory (ARL)** is headquartered in Silver Spring, MD, and has research divisions in Oak Ridge, TN, Idaho Falls, ID, and Las Vegas, NV. ARL carries out research on air quality, atmospheric dispersion, and climate, with a focus on conditions near the Earth's surface that affect people and ecosystems. ARL's air quality work includes improving NOAA's operational air quality prediction capabilities for ozone and fine particulate matter and providing information on the relationships between sources of air pollution and sensitive ecosystems (e.g., sources of mercury affecting water bodies). ARL also improves the Nation's ability to respond to significant unexpected releases of harmful materials into the atmosphere from nuclear mishaps, volcanic eruptions, industrial accidents, terrorist attacks, and other events. ARL's work includes the development of widely used atmospheric

dispersion prediction tools and improving the Nation's ability to predict dispersion of materials in urban areas. ARL's climate work includes improving the understanding climate processes, variability, and change through the development and application of specialized climate measurements systems and the analysis of key global climate observations. More information about ARL is available at <http://www.arl.noaa.gov/>.

- **Atlantic Oceanographic and Meteorological Laboratory (AOML)** in Miami, FL, conducts research in oceanography, tropical meteorology, atmospheric and oceanic chemistry, and acoustics. AOML scientists study hurricanes, ocean current and temperature structures, ocean-atmosphere chemical exchanges, coral reefs and the coastal ocean. AOML primarily contributes scientific research to improve prediction and forecasting of tropical cyclones and severe weather, better use and manage marine resources, better understand the factors affecting both climate and environmental quality, and to improve ocean and weather services. More information about AOML is available at <http://www.aoml.noaa.gov/>.
- **Global Systems Laboratory (GSL)** in Boulder, CO, incorporates new findings in atmospheric, oceanic, and hydrologic sciences into systems designed to improve understanding of climate and weather at all time scales through new observation techniques, innovative diagnostic and predictive models, advanced computational analysis, and leading-edge workstation display technology. More information about the Global Systems Division (being converted to a Laboratory in the proposed NOAA reorganization) can be found within the current Earth System Research Laboratory web site: <http://www.esrl.noaa.gov/gsd/>.
- **Great Lakes Environmental Research Laboratory (GLERL)** in Ann Arbor, MI, conducts integrated interdisciplinary environmental research in support of resource management and environmental services in coastal and estuarine waters, with a primary emphasis on the Great Lakes. The laboratory performs field, analytical, and laboratory investigations to improve understanding and prediction of biological and physical processes in estuaries and coastal areas and interdependencies with the atmosphere and sediments. GLERL emphasizes a systematic approach to problem-oriented research in order to develop effective environmental service tools. More information about GLERL is available at: <http://www.glerl.noaa.gov/>.
- **National Severe Storms Laboratory (NSSL)** in Norman, OK, conducts weather research aimed at improving the accuracy and timeliness of forecasts and warnings of hazardous weather events such as thunderstorms, blizzards, ice storms, flash floods, tornadoes, and lightning. NSSL has a varied research mission supporting an enhanced understanding of weather processes, improved forecast and warning techniques, new operational applications and advanced radar technologies, and a series of field studies to support theoretical research and modeling. Advances at NSSL contribute to improved operational capabilities, knowledge, and techniques at the National Weather Service and other agencies. More information about NSSL is available at: <http://www.nssl.noaa.gov/>.
- **Pacific Marine Environmental Laboratory (PMEL)** in Seattle, WA, carries out interdisciplinary scientific investigations in oceanography, marine meteorology, and related subjects. Open-ocean observations and modeling work at PMEL improve our understanding of the various processes operating in the world oceans. These observations also support NOAA's environmental forecasting capabilities and services that support marine commerce and fisheries, including tsunami forecasting, ocean circulation, and fish and shellfish stocks

prediction. PMEL also supports an undersea observation and research program in Newport, OR. More information about PMEL is available at: <http://www.pmel.noaa.gov/>.

Cooperative Institutes (<http://www.nrc.noaa.gov/ci>)

OAR has cooperative institute partnerships with academic and scientific institutions to foster long-term collaborations dedicated to advancing oceanic and atmospheric research. These cooperative institutes are usually co-located with one or more NOAA facilities to promote scientific exchange and technology transfer, and provide valuable capabilities and expertise to supplement OAR laboratory work.

The primary purpose of each institute is to create a mechanism to bring together the resources of a research-oriented university or institution, OAR, and other branches of NOAA in order to develop and maintain a center of excellence in research. Each Cooperative Institute represents a synergy that has brought together NOAA and premier academic and scientific institutions in a mutually beneficial arrangement to address issues of national and international significance unique to these partnerships. Among the broad range of topics that Cooperative Institutes address are the Earth's oceans, the Great Lakes, inland waters, Arctic regions, solar terrestrial environment, the intermountain West, and the atmosphere. These partners pool resources to produce the best possible interdisciplinary scientific research and outreach. The institutes are:

- The **Cooperative Institute for Alaska Research (CIFAR)**, located at the University of Alaska-Fairbanks, AK, conducts research on ecosystem function, coastal hazards, and climate change and variability. CIFAR collaborates primarily with the Climate Service (CS) and PMEL.
- The **Cooperative Institute for Limnology and Ecosystems Research (CILER)** is a ten-member consortium of academic institutions in the Great Lakes region. CILER is administratively housed at the University of Michigan in Ann Arbor, MI. CILER conducts research on Great Lakes forecasting, invasive species, observing systems, protection and restoration of resources, and integrated assessment. CILER collaborates primarily with GLERL.
- The **Cooperative Institute for Marine and Atmospheric Studies (CIMAS)**, located at the University of Miami in Miami, FL, conducts research on climate variability, fisheries dynamics, regional coastal ecosystem processes, human interactions with the environment, air-sea interactions and exchanges, and integrated ocean observation. CIMAS collaborates primarily with AOML and the NMFS Southeast Fisheries Science Center.
- The **Cooperative Institute for Mesoscale Meteorological Studies (CIMMS)**, located at the University of Oklahoma (OU) in Norman, OK, conducts research on basic convective and mesoscale research, forecast improvements, climatic effects of/controls on mesoscale processes, socioeconomic impacts of mesoscale weather systems and regional-scale climate variations, Doppler weather radar research and development, and climate change monitoring and detection. CIMMS collaborates primarily with NSSL and several NWS components.
- The **Cooperative Institute for Marine Resource Studies (CIMRS)**, located at Oregon State University, Corvallis, OR, conducts research on West Coast fisheries, ocean environment, and marine mammal acoustics. CIMRS collaborates primarily with PMEL and NWFSC.

- The **Cooperative Institute for Ocean Exploration, Research, and Technology (CIOERT)**, located at Florida Atlantic University's Harbor Branch Oceanographic Institution in Fort Pierce, FL, conducts research on the development of advanced underwater technologies, exploration and research in the frontier regions of the eastern U.S. continental shelf, and vulnerable deep and shallow coral reefs. CIOERT collaborates primarily with the Office of Ocean Exploration and Research (OER) as a NOAA Undersea Research Program (NURP) regional center. Since this center replaced four NURP undersea research centers on the East Coast, it is identified as an undersea research center on the above OAR map.
- The **Cooperative Institute for Research in the Atmosphere (CIRA)**, located at the Colorado State University in Fort Collins, CO, conducts research on satellite algorithm development training and education, regional- to-global-scale modeling systems, data assimilation, climate-weather processes, and data distribution. CIRA collaborates primarily with the Boulder Labs and NESS satellite programs.
- The **Cooperative Institute for Marine Ecosystems and Climate (CIMEC)** is a consortium of seven California universities, led by Scripps Institution of Oceanography at the University of California, San Diego (SIO/UCSD), that includes: California State University, Los Angeles (CSU LA); Humboldt State University; the University of California, Santa Barbara (UCSB); and University of California, Santa Cruz (UCSC). CIMEC conducts research under four research themes: (1) climate and coastal observations, analysis, and prediction; (2) climate research and impacts; (3) marine ecosystems; and (4) ecosystem management. CIMEC replaced the Joint Institute for Marine Observations.
- The **Cooperative Institute for Research in Environmental Sciences (CIRES)**, at the University of Colorado, in Boulder, CO, conducts research on advanced modeling and observing systems, climate system variability, geodynamics, integrative activities, planetary metabolism, and regional processes. CIRES collaborates primarily with the OAR Climate Program Office (CPO) and ESRL.
- The **Joint Institute for Marine and Atmospheric Research (JIMAR)**, located at the University of Hawaii in Honolulu, HI, conducts research on tsunamis and other long-period ocean waves, equatorial oceanography, climate, fisheries oceanography, tropical meteorology, and coastal research. JIMAR collaborates primarily with NOAA's Boulder Labs, PMEL and NMFS programs.
- The **Joint Institute for Marine Observations (JIMO)**, located at Scripps Institution of Oceanography (SIO) at the University of California-San Diego, conducts research on climate and coastal observations, analysis, and prediction, research on biological systems, research in extreme environments, and R&D on observations systems. JIMO collaborates primarily with CS and PMEL.
- The **Joint Institute for the Study of the Atmosphere and Ocean (JISAO)**, located at the University of Washington in Seattle, WA, conducts research on climate, environmental chemistry, marine ecosystems, and coastal oceanography. JISAO collaborates primarily with PMEL and NMFS programs.
- The **Northern Gulf Institute (NGI)** is a consortium of universities, led by Mississippi State University, which includes the University of Southern Mississippi, Louisiana State University, Florida State University, and the Dauphin Island Sea Lab at Stennis Space Center, MS. NGI

conducts research on ecosystem management, geospatial data integration and visualization in environmental science, climate change and climate variability effects on regional ecosystems, and coastal hazards. NGI collaborates primarily with AOML, PMEL, and GLERL.

National Sea Grant College Program (<http://www.seagrant.noaa.gov/>)

Congress established the National Sea Grant College Program in 1966 to enhance the development, use, and conservation of the Nation's coastal, marine and Great Lakes resources. The legislation establishes a network of Sea Grant Colleges to conduct education, training, and research in all fields of marine study. It also directs that grants and contracts may be awarded to "any individual; any public or private corporation, partnership, or other association or entity (including any Sea Grant College, Sea Grant Institute or other institution) or any State, political subdivision of a State, or agency or officer thereof." The National Sea Grant College Program Office is located in Silver Spring, MD. Currently, there are 32 university-based Sea Grant programs located in every U.S. coastal and Great Lakes state, Vermont, and Puerto Rico. Most Sea Grant programs include multiple campuses of different universities across the state. These programs have aligned their efforts around the NOAA National Sea Grant College Program Strategic Action Agenda, which focuses on four critical areas: Safe and Sustainable Seafood Supply, Sustainable Coastal Development, Healthy Coastal Ecosystems, and Hazard Resilience in Coastal Communities.

Office of Ocean Exploration and Research (<http://explore.noaa.gov/>)

The Office of Ocean Exploration and Research (OER) is comprised of the former NOAA Undersea Research Program (NURP) and the Ocean Exploration (OE) Program. OER's two primary functions are exploration and research:

- *Exploration:* This program supports: (1) exploring unknown and poorly known ocean areas; (2) mapping the physical, geological, biological, chemical, and archaeological aspects of the oceans; (3) utilizing new sensors and systems for ocean exploration; and (4) engaging a wide variety of audiences by innovative means, including new telepresence technologies. OER operates the NOAA Ship *Okeanos Explorer*, a converted T-AGOS class vessel dedicated to supporting NOAA ocean exploration missions.
- *Research:* OER utilizes a network of regional undersea centers and CIOERT to focus on the following areas: (1) core research based on national and regional undersea priorities, including frontiers of the extended continental shelf and deep and shallow corals; (2) development, testing, and transition for advanced technologies associated with ocean observatories, submersibles, advanced diving technologies, remotely operated vehicles, autonomous underwater vehicles, and new sampling and sensing technologies; (3) discovery, study, and development of natural resources and products from ocean, coastal, and aquatic systems; and (4) undersea science-based education and outreach programs to enrich ocean science education and public awareness of the oceans and Great Lakes.

Office of Weather & Air Quality

The Office of Weather & Air Quality (OWAQ) has two major missions. The first is to provide research and development that supports more accurate and timely warnings and forecasts of: (a) high-impact weather that causes loss of life and property and (b) air quality parameters, including ozone and aerosols/particulate matter, which impact human health, cause crop damage, and affect private-sector planning for power generation. The second is to support research that provides the scientific basis for air quality decision-makers to develop policies and plans that effectively protect public health while also maintaining a vital economy. The Office manages the U.S. Weather Research Program (USWRP).

NOAA High-Performance Computing and Communications Program (HPCC)

HPCC supports many NOAA Strategic Plan objectives through support of information technology (IT) research targeted at improving NOAA's mission, services, and science education. HPCC seeks to make major improvements in the ability to forecast weather and climate, and to disseminate environmental information by stimulating modernization of NOAA's computationally intensive services. HPCC provides NOAA with "mission" agency representation in the Interagency Working Group on IT R&D.

Proposed Reorganization to establish a Climate Service line office:

OAR will transfer the Climate Program Office, the Geophysical Fluid Dynamics Laboratory, and components of the Earth System Research Laboratory (ESRL), including the Chemical Sciences Division, Physical Sciences Division, and Global Monitoring Division, to the Climate Service.

This reorganization will allow NOAA to provide a reliable and authoritative source for climate data, information, and decision-support services and to more effectively coordinate with other agencies and partners. This reorganization reflects NOAA and DOC changing to meet the current circumstances and future challenges of climate change and the public's need for strong climate science and service delivery capabilities.

NOAA carefully considered how existing Line Offices will be affected by this reorganization. NOAA's centralized research Line Office, OAR will continue to serve all of NOAA by supporting and producing preeminent mission driven research. NOAA concurs with NAPA's assessment that, OAR, "provides particularly important institutional glue to support innovation across NOAA." In addition NAPA concluded that, "all parts of NOAA benefit from OAR's work to incubate fundamentally new approaches to mission-centered science, a capability best sustained by maintaining a nimble, freestanding OAR Line Office." OAR serves as the focus for long-term research in NOAA; an innovator and incubator of new science, technologies, and applications; an integrator of science and technology across all of NOAA to attain mission objectives; and a provider of science program analysis and policy support to the NOAA Chief Scientist. OAR, along with our partners, strengthens the science that underpins NOAA's products and services. In addition, OAR supports the Department of Commerce's and Administration's initiatives to generate new, cutting-edge scientific understanding of technical, economic, social, and environmental systems. This reorganization also signifies an opportunity to strengthen NOAA science and address critical needs that have been identified in recent years.

Research and Development Investments:

The NOAA FY 2012 Budget estimates for its activities, including research and development programs, are the result of an integrated requirements-based strategic planning process. This process provides the structure to link NOAA's strategic vision with programmatic detail and budget development. The goal is to maximize our use of resources while optimizing our capabilities. OAR requests \$175,074,000 for investments in R&D and infrastructure to support R&D in the FY 2012 Budget.

NOAA's strategic planning process makes specific reference to the objectives and milestones outlined in the NOAA 5-Year Research Plan for 2008-2012. The strict management of planning against these investment criteria, objectives, and milestones leads to NOAA budget proposals that reflect the research and development needs of the organization. The NOAA Research Council - an

internal body composed of senior scientific personnel from every line office in the agency - is tasked with developing NOAA's 5-Year Research Plan. The Council provides corporate oversight to ensure that NOAA's research activities: are of the highest quality, meet long-range societal needs, take advantage of emerging scientific and technological opportunities, and shape a forward-looking research agenda.

Significant Adjustments-to-Base (ATBs):

NOAA requests a net increase of 0 FTE and \$2,768,000 to fund adjustments to current programs for OAR activities. The increase will provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Service Administration (GSA).

NOAA requests the following technical transfers for a net change to NOAA of \$0:

From Office	Line	To Office	Line	Amount
OAR	Competitive Research	OAR	Integrated Ocean Acidification	\$4,000,000
NMFS	Climate Regimes & Ecosystem Productivity	OAR	Integrated Ocean Acidification	\$1,500,000

OAR requests technical adjustments to transfer \$4,000,000 from the OAR Competitive Research Program line to the OAR Integrated Ocean Acidification line and \$1,500,000 from the NMFS Climate Regimes & Ecosystem Productivity line to the OAR Integrated Ocean Acidification line. This realignment will facilitate the integration of all NOAA ocean acidification activities into a NOAA ocean acidification program.

NOAA also requests the following transfers to the new Climate Service (CS) for a net change to NOAA of \$0:

From Office	Line	To Office	Line	Amount (\$000)/FTE
OAR	Climate Labs & Coop. Institutes	CS	Climate Research - Modeling	\$14,877/ 53 FTE
OAR	Climate Labs & Coop. Institutes	CS	Climate Research - Physical Sciences	\$2,993/ 25 FTE
OAR	Climate Labs & Coop. Institutes	CS	Climate Research - Chemical Sciences	\$9,203/ 36 FTE
OAR	Climate Labs & Coop. Institutes	CS	Climate Research - Global Monitoring & Research	\$6,240/ 25 FTE
OAR	Competitive Research Program	CS	Climate Research - Modeling	\$4,832/ 15 FTE
OAR	Competitive Research Program	CS	Climate Research - Physical Sciences	\$301/ 5 FTE
OAR	Competitive Research Program	CS	Climate Research - Chemical Sciences	\$4,828/ 4 FTE
OAR	Competitive Research Program	CS	Climate Research - Global Monitoring & Research	\$7,365/ 15 FTE

OAR	Competitive Research Program	CS	Climate Research - Competitive Research Program	\$68,595/ 44 FTE
OAR	Competitive Research Program	CS	Integrated Climate Service - NIDIS	\$9,762/ 1 FTE
OAR	Competitive Research Program	CS	Integrated Climate Service - Regional Services	\$788/ 3 FTE
OAR	Competitive Research Program	CS	Integrated Climate Service - Communication & Education	\$1,400/ 0 FTE
OAR	Competitive Research Program	CS	Observations & Monitoring - Ocean Observations	\$40,378/ 19 FTE
OAR	Competitive Research Program	CS	Observations & Monitoring - Climate Data & Information Services	\$1,014/ 0 FTE
OAR	Competitive Research Program	CS	Observations & Monitoring - Environmental Sciences	\$483/ 0 FTE
OAR	Competitive Research Program	CS	Observations & Monitoring - Atmospheric Observations	\$453/ 1 FTE
OAR	Regional Climate Assessment	CS	Integrated Climate Service – Assessment Services	\$9,000/ 0 FTE
OAR	Climate Data & Information	CS	Climate Research - Competitive Research Program	\$1,133/ 1 FTE
OAR	Climate Data & Information	CS	Integrated Climate Service - NIDIS	\$3,753/ 0 FTE
OAR	Climate Data & Information	CS	Observations & Monitoring - Climate Data & Information Services	\$2,395/ 0 FTE
OAR	Climate Data & Information	CS	Observations & Monitoring - Ocean Data & Information Services	\$12/ 0 FTE
OAR	Climate Data & Information	CS	Observations & Monitoring - Atmospheric Observations	\$4,787/ 2 FTE
OAR	Climate Operations	CS	Climate Research - Modeling	\$320/ 0 FTE
OAR	Climate Operations	CS	Integrated Climate Service - Regional Services	\$593/ 0 FTE
OAR	Climate Other Partnership Programs	CS	Climate Research - Chemical Sciences	\$350/ 0 FTE
OAR	Climate Other Partnership Programs	CS	Climate Research – Global Monitoring & Research	\$100/ 0 FTE
OAR	Climate Other Partnership Programs	CS	Climate Research – Competitive Research Program	\$645/ 0 FTE
OAR	Climate Other Partnership Programs	CS	Integrated Climate Service – Regional Services	\$3,000/ 0 FTE
OAR	W&AQ Labs & Coop. Institutes	CS	Climate Research - Modeling	\$3,456/ 4 FTE
OAR	W&AQ Labs & Coop. Institutes	CS	Climate Research - Physical Sciences	\$7,472/ 22 FTE
OAR	W&AQ Labs & Coop. Institutes	CS	Climate Research - Chemical Sciences	\$3,800/ 0 FTE

OAR	W&AQ Labs & Coop. Institutes	CS	Climate Research - Global Monitoring & Research	\$192/ 1 FTE
OAR	W&AQ Other Partnership Programs	CS	Climate Research – Physical Sciences	\$500/ 0 FTE
OAR	W&AQ Other Partnership Programs	CS	Climate Research – Chemical Sciences	\$500/ 0 FTE
OAR	Research Super-computing	CS	Climate Research - Research Super-computing (PAC)	\$10,379/ 0 FTE
Total OAR				(\$225,899)/ (276) FTE

NOAA requests a technical adjustment to move \$225,899,000 and 276 FTE from OAR to CS. These funds will be used to support the formation of the Climate Service as a new NOAA line office.

Other Adjustments:

The NOAA FY 2012 Budget for OAR also requests other adjustments in the amount of \$4,637,000 to restore funds that were anticipated in FY 2011 to be transferred from the Department of Agriculture related to the Promote and Develop (P&D) account. The P&D transfer represents funds derived from duties on imported fisheries products and are transferred to NOAA from the Department of Agriculture. The annualized FY 2011 Continuing Resolution provided \$36,056,800, including carryover, less than requested in FY 2011 President’s Budget due to a downturn in the international fisheries markets. To address the difference between estimated and actual transfer amounts in FY 2011, NOAA allocated the shortfall in the transfer to each of its seven line offices, taking a 1.06 percent reduction to each Program, Project, or Activity (PPA) line. For FY 2012 NOAA requests an adjustment to offset the impact of the FY 2011 shortfall.

From Office	Line	To Office	Line	Amount
OAR	All	OAR	All	\$4,637,000

Administrative Cost Savings:

The Administration is pursuing an aggressive government-wide effort to curb non-essential administrative spending called the Administrative Efficiency Initiative (AEI). In order to be good stewards of taxpayer money, the Federal Government should continue to seek ways to improve the efficiency of programs without reducing their effectiveness. As such, the President directed each agency to analyze its administrative costs and identify savings where possible. After reviewing its administrative costs, OAR believes that it can generate \$3,235,000 in administrative cost savings. OAR has targeted a number of areas to achieve these savings, at both the Line Office Headquarters level and throughout the program offices. Using NOAALink, OAR anticipates generating savings through more strategic sourcing of products and services. Consolidation of products will enable buying in bulk to reduce prices. Consolidation of services will also result in dollar savings by reducing the number of contracts to be managed. Besides NOAALink, OAR believes it can find other efficiencies among its contract expenditures, such as by reducing staff on IT and administrative services contracts. OAR plans to consolidate SharePoint and Graphic Services between IT and Communications. Additional savings will come from absorbing inflationary cost adjustments (ATBs). In the area of human capital, OAR expects to reduce its costs by canceling some planned hires, downgrading some positions, and working to reduce its workers compensation costs. Administrative

savings in the areas of logistics planning and general administrative support have been identified by limiting of the use of overnight mail services as well as consolidating services through a single provider. OAR has also identified savings tied to IT-related items, primarily through delaying the refresh of computer equipment and eliminating redundant software licenses. In addition, OAR expects to reduce costs through business process reengineering. The \$3,235,000 in administrative savings identified above represent real reductions to OAR's funding level and will help reduce overall spending by the Federal government. Moreover, OAR is ready to work toward other efficiencies identified by Department's review teams.

Headquarters Administrative Costs:

In FY 2012, OAR Line Office headquarters will use \$6,102,800, after instituting planned savings as a result of the AEI mentioned above, in funds to support general management activities, financial and budgeting, and IT related expenses, as well as supporting facilities and other general operating costs. These funds also include support for service contracts, utilities, and rent charges from the General Services Administration. As part of the AEI, OAR has reviewed its Line Office Headquarters costs and will be able to reduce previously planned costs by \$670,000. Specifically, OAR will use headquarters administrative funds to support the following:

Headquarters Program Support Type	Description	FY 2012 Amount	FY 2012 FTE associated with OAR Line Office HQ
General Management & Direction	Includes Assistant Administrator's office, public affairs, information services	\$2,171,600	10.4
CFO Operations	Includes Budget, Finance and Accounting	\$1,497,900	14.1
CIO Operations	Includes IT-related expenses and other CIO related activities	\$746,200	5.8
CAO Operations	Includes Facilities and Security costs, as well as other CAO related activities	\$803,200	0
Human Resources	All HR services, including EEO	\$856,500	14.3
Procurement services, Acquisitions, and Grants Management Operations		\$697,400	6.0
Total before AEI savings		\$6,772,800	50.5
<i>AEI Savings</i>		<i>(\$670,000)</i>	-
Total post AEI savings		\$6,102,800	50.5

NOAA recognizes the need to improve the transparency of the policies and procedures used by its line office headquarters to bill component programs for management and administrative services. NOAA is currently re-evaluating, standardizing, and documenting these policies and procedures for each line office. Prior to the beginning of FY 2012, NOAA will publish its policies and procedures for assessing headquarters and administrative costs within the line offices on the NOAA CFO public website along with other budget and finance documents. NOAA looks forward to working with the

Congress and other interested parties to increase the transparency and confidence in NOAA's financial management.

APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH, AND FACILITIES

SUBACTIVITY: CLIMATE RESEARCH

The objectives of the Climate Research sub-activity are to:

- Pursue earth systems modeling as a unique OAR climate role.
- Conduct research and develop technology to improve observing and monitoring systems essential for climate, oceanographic, and ecosystems research, monitoring, and data management;
- Advance research capabilities for seasonal, interannual, and longer-term climate variability.

Climate research has the mission of monitoring and understanding the Earth's climate system to predict both the potential long-term changes in global climate as well as shorter-term climate variations that are of societal and economic importance. More information on OAR's climate research is available at: <http://www.oar.noaa.gov/climate/>.

LABORATORIES AND COOPERATIVE INSTITUTES

Climate Observations and Monitoring

OAR's Climate Observations and Monitoring provides and interprets oceanographic data and conducts research relevant to decadal climate change and coastal ecosystems. On a global scale, Atlantic Oceanographic and Meteorological Laboratory (AOML) scientists are studying the dynamics and variability of ocean currents, the redistribution of heat, salt and momentum through the oceans, the interactions between oceans, climate, and coastal environments, the influence of climate changes and of the ocean on extreme weather events as well as the exchange of CO₂ between the ocean and the atmosphere and its effects on global warming and climate change. This research is conducted through numerous open-ocean cruises aboard NOAA's research vessel, the *Ronald H. Brown*, and by using commercial shipping vessels and autonomous vehicles. AOML designs new instrumentation, improves old, and analyzes satellite-based instruments, numerical models and other large ocean and atmospheric datasets. AOML hosts NOAA's Global Ocean Observing System (GOOS) Center, which provides ocean surface and sub-surface data to NOAA's National Centers for Environmental Prediction (NCEP) in support of seasonal-to-interannual climate forecasts and which also generates data for decadal-scale climate research. This program supports NOAA's climate goal by laying a framework for future research that promises to improve the ability of climate models to predict summer rainfall and hurricane activity for the Western Hemisphere. The scientific community has shown excellence in: implementing and maintaining the ocean observing system, distributing data to science and operational centers, and monitoring and assessing critical ocean parameters related to climate.

Excellence in the implementation and maintenance of the ocean observing system has resulted in the following AOML accomplishments:

- Carried out all Expendable Bathythermograph (XBT) transects to: monitor meridional heat advection in the Atlantic Ocean, complement Argo float observations in all ocean basins for upper ocean heat studies, and monitor western boundary currents and mesoscale features in all ocean basins.
- Contributed to the deployment and data management of the global array of Argo floats.

- Managed the deployment and data quality control and distribution of the global drifter array for surface current measurements and for validation of satellite-derived sea-surface temperature fields.
- Developed and started implementing a Meridional Overturning Circulation (MOC) observational network in the South Atlantic Ocean.

Climate Observations and Analysis

OAR's Climate Observations and Analysis provides core infrastructure activities (research, technology development and observing system implementation) that are central to meeting NOAA's climate goals. These include (1) providing instrumentation to support the National Weather Service (NWS)/National Data Buoy Center (NDBC) Tropical Moored Observations in the Pacific (TAO); (2) establishing and maintaining moored buoys in the Atlantic (PIRATA) and Indian Ocean (RAMA) tropical moored buoy arrays; (3) conducting Argo float deployment and research activities; (4) monitoring ocean carbon uptake and storage; (5) conducting moored and underway CO₂ measurements; (6) conducting research on the issue of Ocean Acidification; (7) conducting NOAA/National Science Foundation (NSF) operations in support of the global CLIVAR Repeat Hydrography program; (8) maintaining certain global ocean reference station time series moored arrays; (9) conducting Marine Aerosol; (10) Atmospheric Chemistry; (11) Air Quality research cruises; (12) conducting autonomous glider sections of western boundary currents in the Solomon Sea; (13) observing ocean modeling system adequacy studies; and (14) participating in ocean data management and information technology activities.

The following is a more detailed description of the PMEL Climate Activities currently being conducted:

- Tropical Moored Time Series Buoy Arrays: PMEL has sole responsibility for maintaining the PIRATA Array in the Atlantic (17 sites) and the Research Moored Array for African-Asian-Australian Monsoon Analysis and Prediction (RAMA) in the Indian Ocean. RAMA was initiated in 2004 as a multi-national undertaking. At present, 22 sites are occupied, 15 of which are instrumented with NOAA/PMEL moorings. All moored surface buoys report data in near real time using the Argos data telemetry system. Eventually, a 44-mooring array is anticipated, depending on the availability of funding and international commitments.
- Ocean Carbon Uptake and Storage: PMEL, along with AOML, has defined a long-term program to quantify the role of the oceans in the sequestration of carbon dioxide, through the development of CO₂ measurements aboard buoys, research ships and vessels of opportunity. Funded by the Climate Service together with NSF and NASA, the PMEL carbon program includes projects such as CLIVAR/ CO₂ Repeat Hydrography, Ocean SITES moored CO₂ measurements, and surface underway CO₂ measurements. The PMEL ocean carbon program has also initiated an assessment of the role of coastal oceans in the global carbon cycle and the impacts of ocean acidification on marine resources using short-term funding sources.
- Ocean Climate Stations: This global network of PMEL Ocean Climate Station (OCS) surface moorings carry a full suite of meteorological, carbon flux, subsurface physical and in some cases biogeochemical sensors for monitoring and understanding the global climate system. The PMEL OCS program is a NOAA contribution to the global network of Ocean SITES time series reference stations. All data are publicly available. PMEL has a long-term OCS south of the Kuroshio Extension (KEO), while JAMSTEC operates the station north of the Kuroshio Extension (JKEO). Since June 2007, PMEL OCS program has had a mooring at Ocean Station PAPA in the Northeast Pacific Ocean that

- also contributes to the ocean acidification program. A new reference station mooring is planned for long-term deployment in the southwest Indian Ocean in late FY 2011.
- Argo Floats: PMEL provides Argo floats for the International Argo array, funding about 55 floats in FY 2010. Argo is an international program to increase oceanographic data for operations and research purposes by developing an observation system akin to the global atmospheric observation system. PMEL also contributes to improvements in quality control for salinity measurements of Argo floats. PMEL is advocating the implementation of additional measurement capabilities within the Argo program, notably adding oxygen and nutrient measurement capability to the floats. PMEL provides approximately ten percent of the total international Argo float array.
 - Atmospheric Chemistry Program: PMEL conducts aerosol investigations in marine areas, from coastal investigations to larger-scale experiments downstream of major continental land masses and industrialized areas. In FY 2010, PMEL led the ship borne portion of the CALNEX project, a collaboration between the California Air Resources Board and NOAA to determine the sources and airborne aerosol particles and particulate matter from the Los Angeles and San Francisco Bay areas and determine the effects of these aerosols on the environment.
 - Autonomous Glider Sections in the Solomon Sea: PMEL and Scripps Institute of Oceanography scientists have deployed autonomous gliders to make a series of detailed current observations along pre-programmed transect routes in the Solomon Sea. This work began in 2007, and eight sections have been completed. In addition to the NOAA support, NASA has provided support for a post-doctoral fellow to study the data and compare it with numerical model results. NASA is supporting parallel model studies at UCLA. Western Boundary Currents such as the currents being studied in the Solomon Sea provide key information about ocean circulation patterns and their impact on global climate.
 - Data Management: PMEL has a leadership role in the Data Management and Communication (DMAC) activities of the Global Integrated Ocean Observing System. The PMEL DMAC activity, supported by PMEL base funds as well as funds from NOS and NESS, provides improved management and availability of the wide array of ocean-related data collected by member nations.
 - Tropical Ocean SITES: PMEL contributions to Ocean SITES include all ATLAS moorings within the TAO, PIRATA, and RAMA arrays. In addition, embedded within these tropical moored buoy arrays are specially instrumented reference sites for air-sea heat, moisture, and momentum fluxes (four in the Pacific, four in the Atlantic, and two in the Indian Ocean).

While the above descriptions focus on the ocean data collected by PMEL scientists, PMEL scientists also use these data to conduct research on today's critical ocean-climate questions, ranging from seasonal-to-interannual climate variability and its impact on national and global populations to longer-term climate impacts on scales of a decade or longer.

These programs provide a major portion of the U.S. contribution to the global ocean observations for climate, which are required to monitor, understand, and forecast the Earth's climate system. This information is crucial for the future health of the entire planet. It contributes to forecasts of natural disasters such as major El Niños, which occur on interannual time scales. A major El Niño, such as the unpredicted 1981-1982 event, can cost the U.S. economy billions of dollars. Floods, droughts, heat waves, and extreme weather events are all influenced by the climate system. Our ability to predict them depends on ongoing climate measurements, especially in the 70 percent of the globe

covered by the ocean. For example, sea-level rise depends on the heat content of the ocean, which is monitored by both the Argo float and repeat hydrography programs.

Atmospheric Observations & Monitoring / Plume Dispersion

OAR's Atmospheric Observations & Monitoring/Plume Dispersion includes two activity areas:

1. Research related to climate observations. This has three sub-activities:
 - a. Making and organizing high-quality observations of climate variability and change and key physical and chemical processes that influence climate. This includes taking measurements at experimental sites that characterize how the atmosphere, land surface, and flora affect each other, e.g., water from the soil and plants is transferred to the air, affecting atmospheric humidity and temperature and influencing agriculture and drought. Such information is important for evaluating and improving models of the climate, as the fluxes of energy and moisture between the land and air are crucial factors in climate variability and change. Another example of specialized observations is leading the establishment of an international network to take highly accurate and reliable measurements of the atmosphere above the Earth's surface, which would increase the value of existing measurements (e.g., satellite) by providing a stable reference characterization of atmospheric conditions.
 - b. Analyzing climate observations to determine what natural climate variability has occurred in the past and what climate trends have occurred. These analyses are used to evaluate and improve climate models and to inform national and international climate assessments.
 - c. Investigating how regional climate models and observations can be effectively combined to improve projections of the future, improving the Nation's ability to understand localized impacts of climate change.

This work is important because there are still significant uncertainties about details of how and why climate changes. Reducing those uncertainties is essential for improving the understanding of natural climate variability and climate trends and for improving projections of future climate to inform mitigation and adaptation decisions. Observing and analyzing the climate are essential steps for making those improvements. Specialized climate observations provide the core information required for improving decisions. Analysis of climate observations is an essential complement to significant investments in climate observations (e.g., via satellite) and climate modeling. These analyses verify that observations are trustworthy; improve the understanding of trends, their significance, and the climate systems; and help ensure that the models are accurate. The end result of all of these activities is to improve the reliability and comprehensiveness of the information used to guide climate mitigation and adaptation activities.

2. Improved characterization and prediction of how airborne hazardous materials are dispersed. Hazardous materials include smoke, harmful chemicals, radioactive materials, and biological agents—released either accidentally or intentionally. Wind and turbulence are key factors influencing how such materials are transported. OAR's Air Resources Laboratory (ARL) is studying winds and turbulence in urban environments (where most people live) and is investigating improved techniques for measuring and predicting such winds. OAR also develops widely used tools for predicting dispersion for a broad range of applications, including chemical, radiological, and biological hazards. OAR's work on dispersion tools includes improving the accuracy; adding specialized tools for specific applications (e.g., short-range chemical incidents); and providing better ways for decision-makers to understand predictions and their associated uncertainties.

OAR's plume dispersion activities provide essential information for first responders and emergency, industrial, agricultural, and transportation managers to minimize risks to health, safety, and economic

activities. If emergency managers do not know where hazardous materials will spread, they cannot effectively evacuate people and industrial and transportation companies cannot take other protective measures. NOAA's plume dispersion information and tools are used for a wide range of situations, including oil drilling platform disasters, chemical plant explosions, containment failures at nuclear reactors, and the spread of plant pathogens. Thousands of people and groups use these tools, including the National Weather Service, other Federal agencies (e.g., the Forest Service), other countries' weather services, and universities. These dispersion tools have also been applied to air quality issues, such as wildfire smoke, dust, and volcanic ash.

Schedule and Milestones:

Atlantic Oceanographic and Meteorological Laboratory (AOML)

- Observing Systems: AOML will continue to maintain observing systems, monitoring and analysis of critical climate-related parameters such as ocean heat content, meridional heat advection, sea level trends, ocean acidification, and ocean currents.

Pacific Marine Environmental Laboratory (PMEL)

- Tropical Moored Arrays for Climate: The PIRATA array will be maintained in the tropical Atlantic. The RAMA array in the tropical Indian Ocean is planned for completion in 2014, although the schedule of completion could slip due to uncertainties in international partnerships. In the case of all three moored arrays, the corresponding milestone is to deploy and maintain a certain number of moorings, and visit and refresh each existing mooring at least once a year.
- Ocean Carbon Uptake and Storage: Repeat hydrography cruises are carried out approximately every year. These are repeats of full ocean-depth cross sections of the Atlantic (A), Pacific (P), Indian (I), and Southern (S) Oceans (very long north/south transects are divided) originally done more than ten years ago, during other international ocean monitoring programs, and show the long term changes in ocean temperature, salinity, CO₂ and other chemical concentrations, and other water properties. Ocean heat content can be inferred from the data. NOAA has the lead responsibility for a cruise in 2012 (A16N), two cruises in 2013 (A16S and P02), and one cruise in 2014 (P16S). The new Ocean Acidification program beginning in FY 2012 is closely related to the ongoing ocean carbon work.
- Air-Sea CO₂ Exchange: The ocean helps regulate atmospheric CO₂ concentrations through air-sea exchange. The rate of exchange can be determined by making high-resolution measurements on research and vessel-of-opportunity ships. The PMEL CO₂ Program currently maintains instruments that collect CO₂ information from a variety of ships as they transit the oceans. Measurements are underway on three ships in the equatorial Pacific and three ships off the Pacific coast of North America. This is a very cost-effective way to monitor the oceans, requiring no funded research ship time and little intervention by scientists.
- CO₂ Time Series: Time series measurements of ocean carbon and air sea exchange help provide information on carbon cycle variability on time scales ranging from hours to years. The PMEL CO₂ Program is building a network of CO₂ moorings to make high resolution time series measurements in the global ocean. There are 13 CO₂ moorings at present.
- Ocean Climate Stations: This program maintains Ocean Sites mooring in the Kuroshio Extension region and at station PAPA in the Pacific. It will expand to the Agulhas Current in FY 2011. Moorings are visited and refreshed at least once each year.
- Argo Floats: PMEL provides Argo floats for the Argo array. The global array consists of 3,000 floats, each with an expected life span of four years. PMEL replaces approximately 60 floats per year that have reached the end of their useful lives.

- Aerosol Program: This program conducts a major survey cruise to monitor marine aerosols and air quality approximately every other year. The CalNex cruise begins in May 2010.
- Autonomous Glider Sections in the Solomon Sea: This program makes two sections per year across the Solomon Sea, and conducts numerical modeling studies to help interpret the observations.

Air Resources Laboratory (ARL)

- Climate Assessments: This activity contributes to national/international climate assessments (e.g., Intergovernmental Panel on Climate Change) to inform climate mitigation and adaptation (ongoing).
- Climate Observing Systems: This activity conducts studies on the design and evaluation of an international climate-quality observation system for the near-surface atmosphere, which will provide essential information for understanding and predicting climate change. The initial study will cover new international observations in FY 2012; more complete assessments will be performed later.
- Atmospheric Studies: This activity conducts studies characterizing the climatology of the lowest portion of the atmosphere, which is the portion of the atmosphere that directly affects people, agriculture, and ecosystems. A study on conditions in the Arctic will be published by FY 2012, and more comprehensive global analyses will be completed by FY 2014.
- Spatial Variability: This activity performs studies of spatial variability around surface climate stations to improve interpretation of regional climate variability and change and to support model evaluation. Beginning with the evaluation of new approaches in FY 2011, regional studies will take place in FY 2012, followed by initial assessments in FY 2013. Finally, applications to other climate regions will be developed (FY 2013 and beyond).
- Snow Measurement Technology: This activity will report on automated snow measurement technologies to improve characterization of snowfall variability and change, an important influence on water resources in cold and mountainous regions. Algorithms will be evaluated in FY 2011; the broader technology will be assessed by FY 2013.
- Surface Energy Fluxes: Begin studies of physical energy fluxes in different regions to improve climate projections beginning with study preparations in FY 2011 and FY 2012, and conduct regional evaluations annually after that.
- Urban Meteorology: Improve dispersion predictions through studies of urban meteorology. Begin with a vertical profile study in FY 2011 and conduct studies of urban-suburban interface in FY 2012-FY 2015.
- Dispersion Forecast System: Updates to dispersion forecast system, used by National Weather Service and others, for international through local incidents will be completed annually.

Deliverables

The value of the ocean observing system can be assessed by the type and quality of products derived from it and from its scientific and operational value. The current observing system was designed with the objective to assess key climate-related parameters. The full implementation of the observing system will lead to the correct analysis of climate signals and reduction of errors in climate forecasts.

For each of the observation programs, the deliverables and outputs are the observational data, quality controlled, and made available on a publically accessible web site. For programs such as Argo floats, involving measurements by multiple institutions, a single data center web site is typically maintained with the data from all providers available from the single site. The remaining deliverables

are scientific papers in the peer-reviewed literature, giving the results of the research done with the data sets and other studies.

Each of the data collection outputs identified below assumes a certain amount of funding from external sources that is the best estimate at this time. If that funding fails to materialize as planned, the targets are subject to modification.

Performance Goals and Measurement Data

Performance Measure:	FY	FY	FY	FY	FY	FY
Percent of labs that have had formal expert peer reviews in the past 4 years and were rated effective in terms of quality, mission relevance, and performance	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	100%	100%	100%	100%	100%	100%
Description: This performance measure is recognized by the National Academy of Sciences report <i>Evaluating Federal Research Programs</i> which states that “The most effective means of evaluating Federally funded research programs is expert review.”						

Performance Measure:	FY	FY	FY	FY	FY	FY
Estimates of meridional heat transport (number of reports/year)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	8	8	8	8	8	8
Description: Provide reports on the state of the ocean and meridional heat transport in the Atlantic Ocean, derived from Expendable Bathythermograph (XBT) observations. This heat transport is a key part of global heat distribution within climate models. XBT's are the marine equivalent of atmospheric dropsondes. The expected outcome from these reports is advancement in the state of knowledge of oceanic meridional heat transport and an associated reduction in the uncertainty associated with modeled estimates of heat transport over time.						

Performance Measure:	FY	FY	FY	FY	FY	FY
Estimates of global heat storage (number of reports/year)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	4	4	4	4	4	4
Description: Provide reports on the state of the ocean: global estimates of heat storage in the mixed layer, derived from Argo floats, XBT, CTDs, and mooring observations. The expected outcome from the reports is an increase in understanding of the trends in the amount of heat storage in the mixed layer, which is a key indicator of global change.						

Performance Measure:	FY	FY	FY	FY	FY	FY
Estimates of global surface currents (number of reports/year)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	4	4	4	4	4	4
Description: Provide reports on the state of the ocean: global surface currents. The outcome of these reports is a continual improvement in the precision with which the state of the ocean and, in particular, the global estimates of surface currents can be described.						

Performance Measure:	FY	FY	FY	FY	FY	FY
XBT transects in high density mode in the Atlantic Ocean	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	18	18	18	18	18	18
Description: Conduct XBT transects (lines of measurement) in the Atlantic Ocean in high density mode to obtain upper ocean thermal profiles to measure upper ocean temperatures and monitor surface and subsurface currents.						

Performance Measure:	FY	FY	FY	FY	FY	FY
Increased percentage of global in-situ ocean observing system (GOOS) implementation.	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	63%	65%	66%	67%	68%	68%
Description: This measure represents the U.S. contribution to the international global ocean observing system (GOOS). There are eight individual ocean observing systems and one data management system that make up the global IOOS. The percent completion of the eight systems determines the cumulative total percent of this performance measure.						

Performance Measure:	FY	FY	FY	FY	FY	FY
Reduced error in global measurement of sea-surface temperature (SST) (⁰ C)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	0.50 ⁰ C	0.35 ⁰ C	0.35 ⁰ C	0.35 ⁰ C	0.35 ⁰ C	0.35 ⁰ C
Description: This measure shows progress in accurately measuring the global sea surface temperature and reflects how improvements in ocean observations will decrease the uncertainty in global sea surface temperature measurements, which will ultimately play a role in calculations of the ocean-atmosphere exchange of heat and the heat storage in the global ocean.						

Performance Measure:	FY	FY	FY	FY	FY	FY
Cumulative number of regions for which a surface-flux study has been conducted	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	0	0	1	2	3	4
Description: "Surface flux" refers to the exchange of energy (e.g., heat) and substances (e.g., water) between the land surface and the atmosphere. These fluxes are critical drivers of climate change because they affect air and land temperatures and other important aspects of the climate. These fluxes also drive important climate-related phenomena, e.g., droughts and such weather-related phenomena as the development of storms. Surface fluxes vary significantly with surface and weather conditions. Lack of understanding about fluxes in different regions and situations are key uncertainties in climate and weather models, limiting the accuracy of forecasts. The measurements taken in this work and the related analyses will provide essential information for improving the representation of the fluxes in climate and weather models, improving the accuracy of both weather and climate forecasts.						

Performance Measure:	FY	FY	FY	FY	FY	FY
Cumulative number of studies on the design and evaluation of an international climate-quality observation system for the atmosphere above the surface.	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target

	0	1	1	1	1	2
Description: The observing system will provide essential information for understanding and predicting climate change						

Performance Measure:	FY	FY	FY	FY	FY	FY
Cumulative number of dispersion prediction system updates provided to the National Weather Service (Plume Dispersion)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	2	3	4	5	6	7

Description: The updates of the HYSPLIT dispersion model provided to NWS will contribute to improved outcomes by improving the accuracy and usefulness of NWS dispersion prediction products. The updates will also improve the ease-of-use and flexibility of the software for meeting NWS needs. NWS uses HYSPLIT for dispersion predictions for applications range from local chemical releases to international radiological incidents providing information to customers ranging from local emergency managers to the World Meteorological Organization.

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PROGRAM CHANGES FOR FY 2012:

No program changes are proposed for FY 2012.

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APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH, AND FACILITIES

SUBACTIVITY: WEATHER AND AIR QUALITY RESEARCH

The objectives of the Weather and Air Quality Research sub-activity are to:

- Support research and development that provides the Nation with more accurate and timely warnings and forecasts of high impact weather events and improved air quality information; and
- Support research that provides the scientific basis for informed management decisions about weather and air quality

To support these objectives, Weather and Air Quality research supports theoretical frameworks, remote sensing technologies, and scientific understanding to improve weather forecasts; air quality forecasts; and crosscuts of weather, air quality, and climate change. Activities include (1) development and assessment of new, cost-effective atmospheric observing systems; (2) development of data acquisition, management, analysis, and display systems; (3) development and verification of numerical models and other techniques to provide prediction guidance for weather, particularly high-impact events; and (4) transfer of research results to aid the research and policy communities and improve operational warnings and forecasts. More information on this sub-activity is available at <http://www.research.noaa.gov/weather/>.

LABORATORIES AND COOPERATIVE INSTITUTES

The Weather and Air Quality Research Labs and Cooperative Institutes (CIs) are charged with the mission of advancing scientific understanding of the Earth. Researchers at the labs and CIs strive to provide more accurate and timely warnings and forecasts of various high-impact weather, water, and air quality events, such as severe storms, tsunamis, and elevated levels of ozone and aerosols (particulate matter). These events often disrupt economic productivity, impact human health, or cause loss of life and property. The laboratories emphasize theoretical and analytical studies, laboratory experiments, and field observations. The primary purpose of OAR's research is to improve NOAA services and to provide the basis for improved decision making by policymakers and the public. The laboratories collaborate closely with university-based CIs and sponsor research through other universities, state and Federal agencies, and private enterprises.

Hurricane Research

OAR's Hurricane Research, within the Atlantic Oceanographic and Meteorological Laboratory (AOML), focuses on improving the understanding and prediction of hurricane track and intensity change through directed research and the transfer of research results to the operational hurricane forecast components. NOAA Research and transition efforts include (1) coordination of NOAA's annual hurricane field program, the Intensity Forecast Experiment (IFEX), a partnership among AOML, NWS Environmental Prediction, and Tropical Prediction Centers, and NESS, supported by the NOAA Aircraft Operation Center's research/reconnaissance aircraft; (2) theoretical and numerical modeling research to improve hurricane forecast guidance, including the preparations of storm surge atlases and wind field diagrams; (3) analysis of data from models and field programs to improve understanding of physical processes that effect hurricane track and intensity changes; (4) providing leadership and critical assistance to the NOAA Hurricane Forecast Improvement Project (HFIP); and (5) active participation in and support of the Joint Hurricane Testbed.

Severe Storms Research

The Severe Storm Research within OAR seeks to improve the accuracy and timeliness of forecasts and warnings of hazardous weather events such as blizzards, ice storms, flash floods, tornadoes,

and lightning. The National Severe Storms Laboratory (NSSL) accomplishes this goal through a balanced research program that conducts research in three general areas including Severe and Hazardous Weather research, Storm-scale Hydrometeorology research, and Weather Radar Research development. These programs aim to (1) advance the understanding of weather processes; (2) improve and develop new forecast and warning techniques and applications and evaluate them for operational use; (3) transfer knowledge, techniques, and applications to the NWS and other agencies; (4) develop enhancements for the NEXRAD Doppler weather radar, the cornerstone of the radar network now operated by NWS offices across the United States; (5) develop new radar technologies (e.g., dual-polarization and phased-array radar); and (6) conduct field programs that use mobile, in situ, and remote observational capabilities to collect data that support theoretical research.

Air Quality Research

OAR's Air Quality Research conducts field studies and long-term measurements and develops numerical models to address a wide range of critical air quality issues. The Air Resources Laboratory (ARL) addresses pollutants including ozone, particulate matter, mercury, nitrogen, and volcanic ash. These pollutants can have significant impacts to and/or implications for human and ecosystem health and to industrial and transportation activities. Field activities include development and evaluation of new measurement approaches, short-term field experiments to characterize key chemical and physical processes, and long-term monitoring of selected trends. Models are developed to forecast selected pollutants and to better understand sources and receptors of pollution. The activities produce (1) information about air quality for air quality planners, managers, and forecasters; (2) models for National Weather Service operations; and (3) recommendations for measurement approaches for the air quality community.

OAR's air quality activities respond to significant societal needs and associated direction from Congress to address those needs. Air pollutants are a primary cause or significant contributor to a number of important societal issues. These include health impacts, such as respiratory ailments (millions of cases annually), deaths caused by heart attacks (tens of thousands of cases annually with tens of billions of dollars in associated losses), and permanent neurological deficits (affecting tens of thousands of newborns annually). As the recent Icelandic volcano eruption demonstrated, accurate volcanic ash predictions have very large economic impacts and are essential to safe operation of aircraft. Accurate information about air quality trends and sources of pollution affecting key ecosystems is also required to optimize the tens of billions of dollars spent annually on air pollution controls and to inform international regulations (e.g., regarding mercury emissions). Finally, contamination of fish by mercury (which primarily comes from air pollution) can affect the value of recreational and commercial fishing industries.

Advanced Computational Analysis & Display

OAR's Advanced Computational Analysis & Display provides observing, prediction, computer and information systems that deliver environmental products ranging from local to global predictions of short-range, high impact weather and air quality events to longer-term intra-seasonal climate forecasts. These systems are designed to improve our understanding of weather at all time scales by incorporating new findings in atmospheric, oceanic, and hydrologic sciences. New observation techniques and assessments, innovative diagnostic and predictive models, advanced computational tools and techniques, and leading edge workstation display technology are developed to improve the quality and usability of forecast information. In conjunction with the Cooperative Institute for Research in the Atmosphere (CIRA) and the Cooperative Institute for Research in Environmental Sciences (CIRES), the Global Systems Laboratory (GSL) develops environmental products to serve the needs of operational weather forecasters, emergency managers, transportation and energy providers, and the general public, as well as environmental scientists seeking ways to improve

operational weather products. GSL also works closely with the Developmental Testbed Center (DTC), a distributed facility with NCAR where new models and techniques can be tested and evaluated by the numerical weather prediction community.

Current activities include assimilation of data from satellites, radars, aircraft, ground stations, and other remote sensors into research and operational atmospheric models to improve forecasts and warnings. For example, studies have concluded that assimilating Global Positioning System meteorological (GPS-Met) data results in at least a 10 percent improvement in the atmospheric water vapor forecast. GPS-Met data measure the total amount of water vapor in the atmosphere and are used to verify the accuracy of satellite, radiosonde, and other upper-air moisture measurements. These and other upper-air and surface observations collected by an environmental information system called the Meteorological Assimilation Data Ingest System (MADIS) are also used to improve the prediction models and provide situational awareness to National Weather Service forecasters. MADIS currently ingests data from over 60,000 surface mesonet stations operated by both government and private entities throughout the country, and makes these data available over the web to the public.

GSL conducts advanced data assimilation studies to support NOAA's Hurricane Forecast Improvement Project (HFIP) and the Hazardous Weather Testbed/Warning on Forecast (HWT/WoF) project. GSL's key participation in the HWT/WoF centers on the development of the High-Resolution Rapid Refresh (HRRR), a 3-km model updated hourly. This model is running experimentally at GSL and is currently scheduled for implementation at NWS/NCEP for 2014 or later pending the availability of sufficient high performance computing. This rapidly-updated and high resolution model is expected to support severe hazardous weather forecasts, airport terminal weather forecasts, and renewable energy forecasts.

In addition to the HRRR model, GSL also develops local, regional, and global weather models. Local models and local data assimilation technologies can provide forecast resolutions of 500 meters and update as rapidly as every hour. Such local models greatly improve short-range forecasting and are essential for forecasting flash floods, landslides, wildland fire progression, toxic plume dispersion, and other events where weather information on a very local scale is critical. Development of an ensemble of models is also progressing to provide a range of possible forecast scenarios that can assist emergency managers with decision making. Other projects under development and improvement include (1) two complex global models, the FIM (Flow-following, Finite-volume Icosahedral Model) and its nonhydrostatic version, the NIM (Nonhydrostatic Icosahedral Model) that have the potential to improve prediction time scales in NOAA global forecasts from hours to at least weeks and the potential to bridge the gap between 14-day weather forecasts and seasonal climate forecasts; (2) the Observing System Simulation Experiment (OSSE) which can be used to test the possible effectiveness of an unmanned aircraft system mission or the release of balloon radiosondes into the path of approaching severe weather; (3) advanced capabilities for the Advanced Weather Interactive Processing System II (AWIPS II), the next generation forecast information and workstation including FX-Net, a spin-off system that allows AWIPS to be displayed on a laptop in the field for use by the NWS Incident Meteorologists on site at wildland fires, toxic spills, and other events and FXC, a system that provides real-time collaboration between remotely-located forecasters, emergency managers, and others; (4) systems development with NWS and the FAA to support implementation of the Next Generation Air Transportation System (NextGen); and (5) Science On a Sphere (SOS), an environmental science exhibit which extends NOAA's ability to help achieve a key goal in NOAA's strategic plan of increasing environmental literacy. Building on NOAA's collective experience and knowledge of the Earth systems, NOAA uses Science on a Sphere as an instrument to enhance informal educational programs in science centers, universities, and museums across the world.

Tsunami Research

OAR's Tsunami Research supports the NWS Tsunami Warning Centers by conducting research and development on to improve tsunami forecasting. NOAA develops and transfers the Pacific Marine Environmental Laboratory's (PMEL) research results to NWS to improve forecast abilities and modeling which provide valuable information to decision makers. The Tsunami Project seeks to mitigate tsunami hazards in all the coastal states and territories through improved tsunami warnings using state-of-the-art instrument systems developed by the Laboratory's Engineering Development Division and tsunami forecast models developed by NOAA's Center for Tsunami Research (NCTR).

PMEL has developed engineering technology and numerical models to greatly improve the delivery of reliable tsunami forecasts to citizens in U.S. coastal communities. PMEL engineers and tsunami scientists have developed a forecast system which integrates observational data, model output, and scientific decision-making by forecasters which can deliver accurate and timely forecasts that have been proven in sixteen tsunami events since testing of this system began. NOAA needs to continue the development and implementation of this system to ensure the protection of all coastal communities.

Additional research capabilities will provide Tsunami Warning Center staff with improved methods of product delivery that will give emergency managers and the public more time and information to take the proper actions. The tsunami research program will also provide operational model access to scientists of foreign nations and to academic institutions to encourage more widespread use of the technology and to foster scientific improvements to the tsunami forecast system.

Besides providing more complete and accurate information to emergency managers, one of the major benefits that improved tsunami forecasts provide is the economic benefit to communities from the avoidance of unnecessary evacuations. In 2003, and again for the Samoan tsunami of 2009, use of the tsunami forecast system resulted in avoided general evacuations of the coastal areas on the island of Oahu. Based on past similar evacuations and adjusting for inflation, Hawaii officials estimated they avoided costs of over \$60 million for the 2003 event and again avoided costs in the tens of millions of dollars for the Samoan tsunami.

Unmanned Aircraft Systems

OAR's Unmanned Aircraft Systems (UAS) is an initiative that accelerates the research, development, and transition of innovative new observational platforms and forecast tools to advance NOAA's Earth-system product, service, and information enterprise. UAS platforms represent a collaborative effort of several organizations within NOAA and partnerships with other agencies, including NOAA laboratories, National Weather Service, National Ocean Service, Marine and Aircraft Operations, and NOAA Cooperative Institutes, NASA, and DOE. This initiative is linked closely to the needs of multiple Federal, state, and local agencies. Specific UAS applications in weather research range from (1) hurricane reconnaissance and research to help improve hurricane track and intensity forecasts, to (2) monitoring of Pacific atmospheric river moisture transport and characteristics to help improve west coast winter precipitation and flood forecasts. Specific UAS activities include (1) monitoring high-impact oceanic weather, including flights into tropical depressions that documented higher wind speeds than found by conventional platforms, and successfully launching UAS from NOAA ships and meteorological flights along the CA coast documenting oceanic evaporation rates; and (2) polar surveys and assessments, including 17 flights across Greenland glaciers, documenting melt-water lakes, and marine monitoring.

Unmanned Aircraft Systems have the potential to revolutionize NOAA's ability to monitor and understand the global environment, filling information gaps from Earth surface instruments to satellites and from the ocean surface to the seafloor. This initiative will research the potential of UAS

to provide a broad and synoptic view of our ocean and marine environments that meets tomorrow's needs of government, environmental managers, scientists, businesses and the public. These systems may also provide viable alternatives to aging aircraft platforms.

Preliminary results of NOAA field demonstrations conducted in partnership with other Federal agencies suggest UAS do offer unique observing capabilities that other observing systems cannot provide for enhanced horizontal coverage, time, and vertical profiling of the Earth. In parallel, Federal ocean agencies have agreed to form a partnership on all aspects of the conduct of unmanned systems, demonstrated by the formation of a Task Force for Unmanned Systems reporting to the working group and subcommittee structure of the National Science and Technology Council.

Schedule and Milestones:

FY 2012

- Create a database of quality-controlled radar data observations for severe weather events (the Warn-on-Forecast (WoF) database) including: tornadic supercell thunderstorms, non-tornadic supercell thunderstorms, tornadic non-supercell thunderstorms, multicell thunderstorms, hailstorms, convective lines, quasi-linear squall line tornadoes, flash flood producing convection, and complex storm interactions.
- Develop improved automated radar quality control software.
- Determine which data assimilation methods are most accurate and cost-effective when applied to radar data at convection-resolving scales.
- Explore the predictability of severe thunderstorms using a numerical modeling approach.
- Document current NWS forecaster practices for determining and generating severe weather watches and warnings. Identify gaps in extending watch and warning capabilities.
- Develop and implement a new tsunami forecast system at the NOAA Tsunami Warning Centers by completing tsunami forecast models (75 in the initial group due to be completed by September, 2012) and installation and testing of the tsunami forecasting software system.
- Examine tornadogenesis using VORTEX2 observational datasets and high resolution numerical weather prediction models. Examine the predictability of small-scale phenomena (such as tornadoes or other localized severe weather) using high resolution numerical weather prediction models.
- Conduct yearly experiments in the Hazardous Weather Testbed (HWT). Integrate Social Science experts to examine the impact of probabilistic warnings on public perception.
- Coordinate and conduct yearly Intensity Forecast Experiments in partnership with NWS, NESS, and Aircraft Operations Center (AOC) to collect high quality observations in support of operations and Hurricane Forecast Improvement Project's (HFIP). These experiments will help meet the need to improve hurricane track and intensity forecasts.
- Continue development and testing of new instrumentation, in particular the G-IV tail Doppler radar.
- Develop and test ensemble Kalman filter data assimilation system for possible implementation in NOAA's operational hurricane regional model system (HWRF). Test impact of assimilation of airborne and ground-based Doppler radar data.
- Develop and test advanced nesting capability for possible implementation into HWRF to enable simulations at resolutions down to 1 km.

FY 2013

- Complete study assessing ways of providing severe weather forecast uncertainty. Perform case studies with Warning on Forecast/High-Resolution Rapid Refresh (WoF-HRRR) nesting design, including new data assimilation techniques at HRRR and WoF scales.

- Complete specification of basic components of a complete WoF system, including data conversion and quality control, ensemble initialization, storm-scale forecast model, data assimilation system, display, and diagnostic software, along with all needed computer communication packages.
- Transition Mobile Atmospheric River Monitoring System /Quantitative Precipitation Estimation (MARMS/QPE) to the National Climate Data Center (NCDC).
- Further investigate and utilize the Dual Polarization data from the WSR-88D. Dual Polarization data may be useful for development of volcanic ash detection algorithms, for improved ground-clutter rejection techniques, for discrimination between different predominate hail sizes within a storm, and for development of a tornado debris signature detection algorithm.
- Coordinate and conduct yearly Intensity Forecast Experiment in partnership with NWS, NESS, and the AOC to collect high quality observations in support of operations and HFIP need to improve hurricane track and intensity forecasts. Continue development and testing of new instrumentation, in particular a scanning microwave radiometer (HIRAD) for surface wind field estimation in partnership with NASA.
- Develop and test observing system sensitivity analysis (OSSE) using ensemble Kalman filter data assimilation system and NOAA's operational HWRF. Focus will be on developing synthetic airborne Doppler radar and Lidar observations from high-resolution nature runs of hurricanes.
- Continue tests of the advanced nesting capability for possible implementation into HWRF to enable simulations at resolutions down to 1 km with a focus on coupling the new nests with the operational ocean and wave models.

FY 2014

- Complete an operational demonstration with the NWS operations of a WoF system during the severe weather season with WoF nested inside the HRRR.
- Complete report documenting major findings from VORTEX2.
- Develop a statistically-based algorithm from the WSR-88D historical reanalysis severe weather detections to identify uncertainty parameters and produce a probabilistic warning guidance prototype for severe weather.
- Incorporate Dual Polarization radar data to improve QPE.
- Perform radar data analysis to improve understanding of convective weather systems through comparisons among various radar systems and partnering with data assimilation experts.
- Coordinate and conduct yearly Intensity Forecast Experiment in partnership with NWS, NESS, and AOC to collect high quality observations in support of operations and HFIP need to improve hurricane track and intensity forecasts. Continue development and testing of new instrumentation, in particular a Doppler wind Lidar (DWL) in partnership with NASA.
- Continue tests of ensemble Kalman filter data assimilation system for possible implementation in NOAA's operational HWRF. Test impact of assimilation of radar reflectivity data using OSSE and operational support equipment (OSE) approaches.
- Develop and test advanced physics packages for possible implementation into a HWRF to enable simulations at resolutions down to 1 km. Focus will be on air-sea fluxes and boundary layer.
- Implement High Resolution Rapid Refresh (HRRR) model at NWS/National Centers for Environmental Prediction (NCEP) depending on availability of necessary high performance computing resources.

FY 2015

- Complete a report documenting the readiness of WoF technology and utility of transitioning WoF functionality to operations.
- Assess the use of frequently updated national scale and local ensembles for probabilistic forecasts in the WoF context and determine methods for best communicating uncertainty in warnings to both forecasters and non-NOAA customers with help from Social Science woven into Meteorology (SSWIM).
- Test and evaluate a Probabilistic Hazard Information grid in the HWT based on the results of the historical reanalysis of WSR-88D and other sensor data.
- Expand HL-RDHM and QPE testbeds to other seasons/regions.
- Perform radar data analysis to improve data quality and usability through signal processing improvements. Signal processing improvements may be used to identify and mitigate Wind-farm clutter and to detect tornado signatures using spectral analysis.
- Coordinate and conduct yearly Intensity Forecast Experiment in partnership with NWS, NESS, and AOC to collect high quality observations in support of operations and HFIP need to improve hurricane track and intensity forecasts. Continue development and testing of new instrumentation, in particular a low-altitude unmanned aerial system (UAS) for sampling the boundary layer of the hurricane core.
- Continue tests of ensemble Kalman filter data assimilation system for possible implementation in NOAA's operational HWRF. Test impact of assimilation of satellite microwave radiance data using OSSE and OSE approaches.
- Develop and test advanced physics packages for possible implementation into HWRF to enable simulations at resolutions down to 1 km. Focus will be on microphysics and aerosol.

FY 2016 and Beyond

- Develop the initial data mining applications to identify severe weather signatures in model analyses.
- Demonstrate and test a probabilistic warning system using model assimilation analyses as a prototype for WoF.
- Improve temporal/spatial resolution of MARMS/QPE.
- Continue to maintain and develop research radar systems (NO-XP, KOUN, mobile radars) to support scientific inquiry. Maintenance and development activities include the hardware and software required to collect data, as well as the software needed to perform data analysis and display.
- Address fundamental science questions that may limit WoF utility, including effects of model error on thunderstorm evolution, needed accuracy of storm environmental conditions, and errors in conversions from model data to observational data. VORTEX2 data will assist this evaluation (2018).
- Provide NOAA management with information needed to decide whether to make WoF operational, including the total costs of going forward (2018). Conduct real-time tests of WoF system in HWT in collaboration with NWS forecasters and collect data needed to verify WoF predictions. Collaborate with NWS forecasters to evaluate WoF and develop new display capabilities for use in warning operations. Evaluate WoF predictions using rigorous verification measures and use knowledge gained to further improve WoF system (2020).
- Coordinate and conduct yearly Intensity Forecast Experiment in partnership with NWS, NESS, and AOC to collect high quality observations in support of operations and HFIP need to improve hurricane track and intensity forecasts. Continue development and testing of new instrumentation.

- Continue tests of ensemble Kalman filter data assimilation system for possible implementation in NOAA's operational HWRF. Test impact of assimilation of satellite microwave radiance data using OSSE and OSE approaches.
- Develop and test advanced physics packages for possible implementation into HWRF to enable simulations at resolutions down to 1 km. Focus will be on microphysics and aerosol.

Deliverables:

FY 2012

- Report documenting the relative value of different data sources, new data assimilation and modeling techniques appropriate for use in WoF and a design to optimize WoF via nesting inside the HRRR. Report assessing the ways of providing severe weather forecast uncertainty.
- Incorporate Dual Polarization radar data to improve QPE products.
- Regional, atmosphere-only assessments of mercury source-receptor relationships to inform air quality and environmental decision-makers.
- Improvements to web-based delivery of atmospheric forecast information to support emergency managers, air quality forecasters, and other stakeholders (annual).
- Improvements to volcanic ash prediction system to support safe and efficient flight operations (annual).
- Findings from instrument evaluations and regional field studies of ammonia exchange between the land and atmosphere.
- Use of measurements of air pollutants in precipitation to evaluate and improve NOAA's operational air quality forecast model.
- Improved nesting capability for the operational HWRF that can be tested for implementation in operations.
- Ensemble Kalman filter data assimilation system that can be tested and evaluated for implementation into operations.
- High-quality hurricane observations from airborne experiments for use in hurricane regional model data assimilation and evaluation, in particular dropsondes, Doppler radar, in-situ, and stepped frequency microwave radiometer.

FY 2013

- Report documenting the major components of a WoF system with operational demonstration of some WoF components in the pseudo-operational environment of the HWT.
- Recommendations for improvements to address seasonal biases in particulate matter forecasts.
- High-quality hurricane observations from airborne experiments for use in hurricane regional model data assimilation and evaluation, in particular dropsondes, Doppler radar, in-situ, and stepped frequency microwave radiometer.
- Observing system sensitivity analysis capability utilizing the ensemble Kalman filter data assimilation system and the improved nesting for HWRF.
- Fully coupled advanced nesting capability for testing and evaluation in the operational HWRF model system.

FY 2014

- Report documenting major findings of the VORTEX2 field phase.
- High-quality hurricane observations from airborne experiments for use in hurricane regional model data assimilation and evaluation, in particular dropsondes, Doppler radar, in-situ, and stepped frequency microwave radiometer.

- Findings from field studies of ammonia exchange between the land and atmosphere in a second region.
- Report documenting the impact of improved physics for air-sea fluxes and boundary layer on hurricane track and intensity forecasts using regional HWRF model system.
- Report documenting the impact of assimilating DWL and radar on hurricane track and intensity forecasts using the regional HWRF model system

FY 2015

- Report documenting the assessment of operational readiness of WoF technology, with computer code and documentation suitable for transitioning to operations.
- Preliminary development of a tornado debris signature algorithm using Dual Polarization radar data.
- High-quality hurricane observations from airborne experiments for use in hurricane regional model data assimilation and evaluation, in particular dropsondes, Doppler radar, in-situ, and stepped frequency microwave radiometer.
- Report documenting the impact of improved physics for microphysics and aerosol on hurricane track and intensity forecasts using the regional HWRF model system.
- Report documenting the impact of assimilation radar reflectivity on hurricane track and intensity forecasts using the regional HWRF model system.

Performance Goals and Measurement Data

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Percent of labs that have had formal expert peer reviews in the past 4 years & were rated effective in terms of quality, mission relevance, & performance	Target	Target	Target	Target	Target	Target
	100%	100%	100%	100%	100%	100%
Description: This performance measure is recognized by the National Academy of Sciences report <i>Evaluating Federal Research Programs</i> which states that “The most effective means of evaluating Federally funded research programs is expert review.”						

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
High quality data sets from IFEX hurricane missions (missions – dependent on number of storms flown)	Target	Target	Target	Target	Target	Target
	20	20	20	20	20	20
Description: Provide high-quality data sets for use for use in data assimilation and evaluation of hurricane modeling system (20 missions per year – dependent on number of storms flown)						

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Tests of hurricane observing system improvements	Target	Target	Target	Target	Target	Target
	5	5	5	5	5	5
Description: Provide reports on impact of new and existing observing systems on hurricane track and intensity forecasts using regional HWRF model system (5 of reports per year)						

Performance Measure:	FY	FY	FY	FY	FY	FY
Reports on improvements to the high-resolution regional hurricane forecast system (HWRF)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	5	5	5	5	5	5
Description: Provide reports on impact of improved nesting capability and advanced physics packages applicable at 1-km horizontal resolution on hurricane track and intensity forecasts using regional HWRF model system (5 reports per year).						

Performance Measure:	FY	FY	FY	FY	FY	FY
Demonstrate improved tornado warning lead time (Severe Storms Research)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	13	13	14	14	14	14
Description: This goal shows the amount of warning the public is given for tornadoes (national average, in minutes) by NWS. NSSL conducts research that leads to improved warning skill scores.						

Performance Measure:	FY	FY	FY	FY	FY	FY
Cumulative number of regional assessments of atmospheric mercury source-receptor relationships (Air Quality Research)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	0	1	1	1	1	2
Description: This provides key information for air quality and environmental policy-makers and managers and for negotiators for international agreements—enabling them to effectively target mercury emissions reductions.						

Performance Measure:	FY	FY	FY	FY	FY	FY
Cumulative number of completed field studies of ammonia exchange between the air and land (Air Quality Research)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	0	1	1	2	2	3
Description: This provides essential information for air quality, agriculture, and environmental policy-makers and managers. It also addresses a key uncertainty in air quality models. Each study addresses different regions/land uses (e.g., fertilized farm fields, concentrated animal feeding operation).						

Performance Measure:	FY	FY	FY	FY	FY	FY
Cumulative number of updates provided to the National Weather Service for the volcanic ash forecast system (Air Quality Research)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	7	8	9	10	11	12
Description: This provides improvements to a forecast system used to inform pilots where volcanic ash is located, enabling them to avoid in-flight catastrophes. Examples of improvements include better use of satellite observations to estimate volcano source strength and improved flexibility for configuring simulations for various types of eruptions.						

Performance Measure:	FY	FY	FY	FY	FY	FY
Demonstrate improvement in accuracy of the 3-hour cloud ceiling for aviation forecast (Advanced Computational Analysis and Display)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	5%	10%	15%	18%	20%	20%
Description: This measure demonstrates improvements to the cloud ceiling for aviation forecast are derived from the implementation of short-range, rapidly updated models at NWS/NCEP. Better awareness of expected cloud ceiling over the next 3-hour period is critical to airline safety.						

Performance Measure:	FY	FY	FY	FY	FY	FY
Increase the number of Inundation Forecast Models developed for specific high-risk areas (Tsunami Research)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	65	75	77	79	81	83
Description: This is an important effort related to tsunami readiness, particularly with respect to the areas that need to be evacuated for various levels of anticipated inundation.						

Performance Measure:	FY	FY	FY	FY	FY	FY
Reduce the cost of the DART network operation and maintenance (2010 baseline; Tsunami Research)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	5%	10%	15%	20%	25%	30%
Description: PMEL contributes to this performance measure through a contract from NDBC. Funding is presently directed at reducing costs through development of a self-deploying buoy that reduces vessel time on station, reduces the size requirement of the servicing vessel, and improves safety. Progress is being made, but there are no operational systems of this type currently deployed by NWS.						

Performance Measure:	FY	FY	FY	FY	FY	FY
Demonstrate improved tsunami flooding warning accuracy	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	67%	72%	77%	80%	82%	84%
Description: The accuracy of the warning is determined by comparing it after the fact to the actual tide-gauge measurements. PMEL contributes to this performance measure through the implementation of the new tsunami forecasting system and the development of the interface software that integrates incoming observations, propagation model, and the appropriate inundation forecast models to produce a tsunami forecast. Upon completion of the tsunami forecast system in 2012, we anticipate a target accuracy of the new system at 80 percent compared to observed tide gage records.						

Performance Measure:	FY	FY	FY	FY	FY	FY
Conduct Unmanned Aircraft Systems (UAS) field tests – number of field tests: number of operational transition plans	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	2:1	2:1	2:1	2:1	2:1	2:1
Description: Field tests (with NASA, DOE, & other agencies) focus on data collection over vast, remote areas, including the Gulf of Mexico & Atlantic (e.g., hurricane tests), Central Pacific (e.g., endangered species at the Papahānaumokuākea Marine National Monument), and Arctic (e.g.,						

measuring changes in pack ice). Promising technologies and concept of operations successfully demonstrated during field tests will be selected for further development and transition planning for operational application.

WEATHER AND AIR QUALITY RESEARCH PROGRAMS

Weather and Air Quality Research Programs encourage cooperation with external experts in critical fields of research. NOAA's external partners include Federal, state, and local government entities, universities, and industry. Currently, two primary research programs are supported under this line.

Tornado/Severe Storm Research (Multi-Function Phased-Array Radar)

NOAA is developing new technologies for detecting tornadoes and other forms of severe weather and for disseminating this information to emergency managers, the media, and the general public for appropriate action. Multi-function Phased-Array Radar (MPAR) has the potential to significantly extend lead times for detecting tornadoes and other forms of severe and hazardous weather. Electronically steered beams and faster scan rates can reduce the time it takes to make a complete Doppler radar observation from 4.5 minutes to less than one minute. Coupled with artificial-intelligence-based decision-support systems, tornado lead times could be increased from the current 14 minutes to over 20 minutes.

Major components of this program are (1) continued research support on MPAR technology, (2) engaging industry in a risk reduction effort leading to fabrication of a prototype, and (3) experimentation with a phased-array research testbed at the National Severe Storms Laboratory (NSSL) in Norman, OK. Congress established a joint R&D program for NOAA, DOD, and FAA to investigate the feasibility and benefits of using military phased- array radars for improving severe weather forecast and warning systems. U.S. Navy SPY-1 Phased-Array Radar technology holds considerable promise for making significant improvements to the existing WSR-88D system. NOAA/NSSL is designated to operate and maintain the equipment, provide facilities, approve associated research, and otherwise assist in all related efforts that may arise. Research at NSSL has led to, among other things, the NWS Doppler Weather Radar known as NEXRAD. This radar has saved thousands of lives and significant property loss by helping NWS forecasters extend tornado and severe weather warning lead times from a few minutes to a national average of almost 14 minutes. Since NEXRAD was deployed in the early 1990's, and since it historically has taken 25 or more years to develop and deploy a new radar system, NSSL has begun the MPAR program to provide NWS (in partnership with the FAA) with an alternative highly advanced radar to the aging NEXRAD. It is expected that ultimately the MPAR radar will be more efficient to operate than the NEXRAD and will reduced long-term maintenance costs.

U.S. Weather Research Program (USWRP)

Through its U.S. Weather Research Program (USWRP), NOAA seeks to improve weather and air quality forecast information and products by funding, facilitating, and coordinating cutting-edge research to improve weather predictions, with a special focus on hurricanes and precipitation. USWRP works in close collaboration with the National Weather Service (NWS) to transition this research into useful weather and air quality applications. The USWRP supports societal impact studies in weather and a set of related program projects to provide outreach, linkage, and coordination among NOAA, other government agencies, and the academic and private sectors, both in the U.S. and abroad. Within NOAA, the Office of Weather and Air Quality (OWAQ) Program manages the overall USWRP effort in support of research for air quality forecasting, societal benefits, and related weather research through projects with such internal and external partners as the National Center for Atmospheric Research (NCAR). USWRP project activities include:

- The Joint Hurricane Testbed, where the latest research findings and techniques in hurricane science are tested by scientists and evaluated by operational meteorologists for use at NOAA's National Weather Service's Tropical Prediction Center.
- The Air Quality Program, which supports improvements of 1-3 day forecasts of tropospheric ozone and the development of a forecast capability for fine particulates in the atmosphere, both of which can cause serious pulmonary illnesses. The advances in air quality forecasts are transitioned to NWS operations.
- The Hydrometeorological Testbed (HMT), an ongoing research project supported by NOAA, the USWRP, and other government agencies, such as the State of California and the U.S. Army Corps of Engineers, to improve forecast capabilities of heavy rainfall events. Although the HMT plays a key role in the weather objective to improve precipitation forecasts, it also has climate change implications in terms of a trend towards greater seasonal extremes. The initial research and forecasting technique development occurs in the western U.S. and provides improved warnings of impending storms to state, local, and Federal governmental entities; emergency managers; and reservoir operators. The majority of the base funding for this activity goes to NOAA's Physical Sciences Laboratory and can be found in the NOAA Climate Service base narrative. USWRP supplements that funding and is a mechanism for engaging external partners in this effort that is of key interest to both NOAA's Weather and Climate goals.
- High-resolution numerical models, which accommodate the high resolution spatial and temporal processes required to support weather and flood forecasting. OWAQ supports Federal and university partnerships that are needed to develop techniques to quickly assimilate high-resolution observations from radar (both operational and experimental phased array), satellite, and other sources into models. USWRP will improve existing high-resolution models and develop techniques to produce high-resolution, probabilistic forecasts (using ensembles) in collaboration with the NWS.
- The Societal Impacts Program, which determines the socioeconomic benefits of improved weather forecasts and the optimum presentation of the forecasts to the public and decision-makers, especially improving our understanding of how uncertainties are handled in the models and forecasts. The program is critical for setting weather research priorities and identifying which areas of research will produce the greatest benefits. This program resides at the National Center for Atmospheric Research (NCAR) in Boulder, Colorado, and is supported through a broad agency grant.

Schedule & Milestones:

FY 2013

- Complete analysis and associated report based on field study by the Office of Weather and Air Quality (OWAQ) Programs for air quality forecasting, societal benefits, and related weather research projects.
- Complete report documenting the baseline performance of quantitative precipitation forecasts (QPF) for extreme precipitation events on the U.S. West Coast, and identification of major error sources.

FY 2014

- Complete report from Hydrometeorology Testbed (HMT) describing the path forward to improve west coast QPF in extreme precipitation events.

FY 2016

- Based on hazardous weather testbed (HWT) findings, complete report to NWS documenting potential for improved tornado warnings.

Deliverables/Outputs:

- Report documenting potential for improved tornado warnings produced in collaboration with NWS forecasters within the NOAA hazardous weather testbed (HWT) (FY 2015).
- Joint Hurricane Testbed will evaluate 10 scientific findings per year through FY 2016 for possible inclusion in the tool kit for operational forecasters to use in the forecasting of hurricanes.
- Hydrometeorology Testbed will conduct one field study per year through FY 2016.
- Improved Numerical Weather Models: Test two or more major capability change in the numerical weather model physics, data set assimilation, or model resolution reduction per year in one of NOAA’s research or operational centers through FY 2016.

Performance Goals and Measurement Data

Performance Measure:	FY	FY	FY	FY	FY	FY
Joint Hurricane Testbed (JHT) Evaluations	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	5	5	5	5	5	5
Description: Evaluation of new scientific findings or development of forecaster tools for potential use in operations.						

Performance Measure:	FY	FY	FY	FY	FY	FY
Field study and science reports (OWAQ Programs)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	1	1	1	1	1	1
Description: Perform a scientific air quality field study with experimental data collections followed by completed analysis and report the following years.						

Performance Measure:	FY	FY	FY	FY	FY	FY
Hydro – meteorology Testbed Field Studies	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	1	1	1	1	1	1
Description: Conduct a field study with experimental data collections, scientific evaluation, and consult with operational forecasters on how to improve flood forecasting.						

Performance Measure:	FY	FY	FY	FY	FY	FY
Improved Numerical Weather Model Changes or Tests (USWRP)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	2	2	2	2	2	2
Description: Make changes to the physical parameterization of experimental forecast models and address the uncertainties in numerical weather predictions. This contributes to the improvement of the 1-5 day precipitation forecasts for the U.S., which are issued on a region-by-region basis.						

PROGRAM CHANGES FOR FY 2012:

Weather & Air Quality Research Labs & Cooperative Institutes: Wind Boundary Layer Research to Support Clean Energy Generation (Base Funding: 0 FTE and \$0; Program

Change: +0 FTE and +\$2,000,000) NOAA requests an increase of \$2,000,000 and 0 FTE for a total of \$2,000,000 and 0 FTE for wind boundary layer research to support clean energy generation by advancing weather forecast quality and accuracy to allow for faster and more efficient implementation of wind power usage in the United States.

Proposed Actions:

NOAA proposes to improve the Nation's understanding of the atmospheric phenomena driving and determining boundary layer winds. By developing more accurate wind forecasts and allowing for more accurate predictions of wind power production, this critical investment will help facilitate the expansion of U.S. clean energy generation. To achieve this end, the following two actions are proposed:

1. Deploy wind test beds. To improve short-term operational predictions, NOAA will deploy wind test beds in different regions of the Nation. Regional testbeds are needed because different factors that influence weather, including wind speeds and wind direction, can vary by region. Testbeds will be deployed in the Pacific Northwest, offshore along the Atlantic Coast, the Appalachian region, the inter-mountain west, and California. These test beds will help determine the optimal mix of instrumentation needed for wind resource characterization and forecast improvement. NOAA will perform scientific analyses and develop Numerical Weather Prediction (NWP) models using the data collected at the test beds.

These test beds will be comprised of standard instruments for obtaining wind measurements, such as wind profiling radars and sodars (sound detection and ranging to measure wind profiles). In addition, a Halo Photonics pulsed Doppler-lidar (light detection and ranging technology) system will be purchased and adapted for remote operation and read-out. The lidar data will be especially valuable in the post-project analysis of times when the forecasts were wrong, for model initialization during research model runs to diagnose and improve model performance, and for verification of model output.

2. Improve the HRRR weather model. Additional operational observations will be obtained and assimilated into the High-Resolution Rapid Refresh (HRRR) weather model. NOAA will leverage high performance computing investments that the agency has already made to facilitate improved NWP forecasts. The additional observations collected at the test beds will be used to initialize the HRRR model and equip it with more accurate initial values of weather parameters so that it can produce a more accurate forecast of wind speeds and direction. Even a small improvement in wind *speed and direction* forecast accuracy will result in a very large improvement in the accuracy of our wind *power* prediction because an increase in wind speed increases the amount of wind power produced that is equal to the cube of the wind speed.

The wind test beds and the improved weather forecast models will represent a core national investment that the private sector could leverage to develop tailored products and operate the Nation's electric grid more efficiently, including contributing to efforts to develop a reliable Smart Grid. Smart Grid technology allows for two-way communication and two-way flow of electricity between utility companies and customers, thereby enhancing flexibility and greater efficiency of electric grid operations.

Additionally, improved weather predictions will allow the Nation to obtain larger amounts of energy from renewable resources, use current energy sources more efficiently (i.e., fossil fuels and nuclear energy), reduce the cost of renewable energy, and improve grid stability. There are two main reasons that more accurate forecasts of winds will save money. First, improved wind predictions will reduce the “wind-integration cost” levied on wind energy that is based primarily on the fact that wind is a variable energy source (not dispatchable) and there are inaccuracies in predictions of wind energy across given time periods. Improved forecasts of winds and the resulting increases in accuracy of predicting wind energy production will lower wind-integration charges. Second, improved forecasts of winds will allow grid operators to use smaller amounts of fossil fuel reserves. Once grid operators have more confidence that wind farm operators can deliver the amount of wind energy they schedule (promise) to provide in the next few hours and in the next 24 hours, operators will not have to keep as many spinning and operational reserves on-line and ready to compensate for errors in wind energy forecasts. These improvements in observations and predictions are necessary before renewable energy can provide a significant portion of the total U.S. energy supply, which would reduce the Nation’s dependence on foreign oil and increase our energy security and independence.

Statement of Need and Economic Benefits:

NOAA can help achieve significant benefits for the Nation and enable \$2 to \$4 billion savings to the energy industry within only a few years by providing enhanced weather forecasts. Providing weather observations and predictions is a core NOAA mission, and OAR is well positioned to perform this research to develop improved operational forecasts that will benefit the renewable energy industry.

Additionally, this initiative will contribute to improvements in other weather applications, such as aviation forecasts, as well as fire weather, air quality, severe weather, and dispersion predictions for the release of hazardous materials into the atmosphere.

Base Resource Assessment:

Currently no resources are dedicated to this effort.

Schedule and Milestones:

- Purchase Halo Photonics pulsed Doppler-lidar (light detection and ranging technology) system and adapt for remote operation and read-out (FY 2012).
- Deploy and operate test bed in meteorologically distinct regions of the nation (FY 2012-FY 2016).
- Improve HRRR weather models (FY 2012-FY 2016).
- Perform model analysis and evaluate the meteorological models (FY 2012-FY 2016).
- Ingest and assimilate additional observations, e.g., from wind farms, to improve weather forecast model output (FY 2012-FY 2016).

Deliverables:

- Improved research-grade weather forecast capability designed for transition to operations.
- An assessment of the optimal mix of instrumentation needed for wind resource characterization and forecast improvement, for consideration in developing a national network for wind energy.

Performance Goals and Measurement Data

Performance Goal:	FY	FY	FY	FY	FY	FY
Number of Wind Test Beds (yearly)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Increase	0	1	1	1	1	1

Without Increase	0	0	0	0	0	0
<p>Description: Deploy wind test beds, collect observations, in different regions of the Nation. The sensors at each testbed will collect weather observations that will allow us to increase the skill and accuracy of our forecasts of winds. Different regions of the Nation have different weather conditions, partly based on such issues as the proximity of mountains or coasts. These test beds will allow us to determine the best types and minimum numbers of sensors, per unit area, needed to achieve the improvement in wind forecasts that the wind energy industry has told us is needed for wind energy to be economically competitive.</p>						

Performance Goal:	FY	FY	FY	FY	FY	FY
Cumulative improvement in accuracy of forecasted wind speed and direction and accuracy of forecasted timing, amplitude, and duration of wind-ramp events.	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Increase	0	2%	4%	6%	8%	10%
Without Increase	0	0	0	0	0	0
<p>Description: High-resolution rapid refresh (HRRR) is a research weather model that has demonstrated better results than the NWS operational weather forecast model (RUC). We will use the observations collected at the test beds to create a wind forecast that is sufficiently improved for the private sector to use as a basis for predicting wind energy production in given time periods (e.g., the next 60-90 minutes and the next 24 hours). The amount of wind energy produced is proportional to the wind speed raised to the third power (i.e., the cube of the wind speed). Thus, a small improvement in wind speed forecast accuracy will lead to a large improvement in accurately predicting how much wind energy can be produced.</p>						

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Office of Oceanic & Atmospheric Research
Subactivity: Weather and Air Quality Research

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	10
22 Transportation of things	10
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	15
23.3 Communications, utilities and miscellaneous charges	10
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	950
25.6 Medical care	0
25.7 Operation and maintenance of equipment	5
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	300
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	700
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	2,000

Tornado Severe Storm Research / Phased Array Radar: Multi-Function Phased Array Radar (Base Funding: 4 FTE and \$4,037,000; Program Change: +0 FTE and +\$6,000,000): NOAA requests an increase of \$6,000,000 and 0 FTE for a total of \$10,037,000 and 4 FTE to continue research to demonstrate that MPAR technology can cost-effectively replace aging operational weather and aircraft tracking radars. The MPAR program is jointly funded by NOAA and the FAA, and both agencies are coordinating their budget requests.

Proposed Actions:

This investment in MPAR provides the resources needed for the next step of the project that engages industry to add polarization to the radar by FY 2014. Polarization is not currently available on phased array radars but is a requirement for the NWS. Matching funding will be provided by the FAA to fulfill its requirement for airport terminal weather and aircraft tracking. It is important that the leading agencies establish a joint risk-reduction R&D program in the near future, given the potential for savings, complexity of the mission, the technology involved, agency go/no-go decision points, and the long lead times required for interagency acquisition times. In FY 2012, a contract vehicle will be put in place to acquire a dual-polarized MPAR antenna. Subsequently, the following will happen:

- Research and development will be performed to determine how best to add dual polarization to the MPAR to provide improved rainfall and hail estimates and meet new NWS baseline requirements (FY 2012-FY 2014; \$600K in FY 2012).
- Contract out design and fabrication of dual-polarized, single-faced, PAR demonstrator with FAA (FY 2012-FY 2013; \$5,000K in FY 2012).
- Verify through research that tornado warnings can be improved by scanning the atmosphere faster, by focusing radar beams primarily on critical regions within storms (vs. wasting resources on non-storm areas), and by using new knowledge gained on tornado evolution (FY 2012-FY 2016; \$400K in FY 2012).
- Studies will be performed to assess MPAR polarized antenna array configurations for both weather (NOAA weather and FAA airport terminal weather mission) and air surveillance operations (FAA mission) (FY 2014-FY 2016).
- With industry, design, fabricate, and acquire a fully functional, four-faced, polarized MPAR prototype antenna (FY 2014-FY 2017).

The intent is to complete risk reduction activities and research needed to inform decision makers within NWS and FAA on the feasibility of deploying MPAR as a solution to future NWS and FAA radar requirements.

Statement of Need and Economic Benefits:

By 2020 more than 350 FAA radars and by 2025 nearly 150 weather radars will need to be either replaced or have their service life extended. If MPAR is successful and implemented as a replacement radar, estimated multi-agency savings could total \$4.8 billion in acquisition costs (\$1.8 billion if replacing all existing radars with similar technology) and life-cycle costs over 30 years (\$3.0 billion due to fewer radars) (Federal Research and Development Needs and Priorities for Phased Array Radar FCM-R25-2006). Given that it historically takes 20 to 25 years to perform the research, develop a prototype, test, and deploy new weather radar systems, it is imperative this activity begin now since the FAA radars are already past end of life (and costing increasing amounts of money to extend their life), while the NWS radars are reaching their expected end of life in only 15 years.

The current need is to measure phenomena such as tornadoes on the time scale that they occur (minutes) and to initialize high resolution cloud models with high resolution radar data to move

current operational warnings from “warn on detection” to “warn on forecast.” Independent reports supporting the need for a risk reduction of phased array technology including:

- The National Research Council's (NRC) 2002 report, “Weather Radar Technology beyond NEXRAD” identified phased array radar as a candidate technology. The technical characteristics, design, and costs of PAR systems should be established.
- The June 2006 Office of the Federal Coordinator for Meteorology (OFCM)-sponsored report, “Federal Research and Development Needs and Priorities for Phased Array Radar” (FCM-R25-2006), called for the establishment of a Multi-function Phased Array Radar (MPAR) risk-reduction research and development (R&D) program and creation of an interagency MPAR Working Group (WG/MPAR) to coordinate and report on the R&D activities of participating agencies.
- The March 2007 U.S. DOC Office of Inspector General Audit Report concluded that “PAR is a very promising technology that has been proven effective for military applications, and has the potential to revolutionize weather forecasting...(Report No. DEN-18354-7-0001 2007, pg 14).
- The 2008 NRC “Evaluation of the Multifunction Phased Array Radar Planning Process,” an evaluation of the Multifunction Phased Array Radar planning process, concluded “the MPAR R&D program be continued with the objective of evaluating the degree to which a deployable MPAR system can satisfy the national weather air surveillance needs cost-effectively.”

Base Resource Assessment:

The MPAR program base funding of \$4,037,000 provides for weather-related research on and maintenance of the 30-year-old phased-array antenna donated from the Navy that had been used for tracking missiles. The new investment in MPAR will provide the resources for the next steps of the project, namely to engage industry in: (1) adding polarization to the radar by 2014 so as to meet NWS operational requirements and (2) designing, fabricating, and acquiring a fully functional, 4-faced, polarized MPAR prototype antenna by 2017.

Schedule and Milestones:

- FY 2012:
 - Complete Request for Information (RFI) for design proposals for a dual-polarized PAR demonstrator radar.
- FY 2013:
 - Complete analysis demonstrating improved severe weather observing and monitoring service improvements.
 - Complete pre-prototype construction of a polarized phased array radar sub-arrays.
- FY 2014:
 - Complete construction of at least two candidate dual polarized demonstrator radars.
 - Complete assessment of PAR antenna array configurations needed to build a fully functional MPAR prototype.
- FY 2015:
 - Complete contract signing to engage industry in construction of at least two MPAR prototypes (at least two vendors).
- FY 2016:
 - Complete study and a report that documents potential for improved tornado warnings produced in collaboration with NWS forecasters within the NOAA hazardous weather testbed (HWT).

Deliverables:

- By FY2012:
 - Accept delivery of five to six different contractor designs for Phase I: dual polarized PAR sub-antenna array.
 - Contract completed to engage 3 contractors in fabrication of dual polarized, phased array antenna sub-arrays (Phase II).
- By FY 2013:
 - Report summarizing MPAR’s potential service improvements.
- By FY 2014:
 - Final design selected for dual polarized antenna completing Phase II.
- By FY 2015:
 - Final antenna array configuration design selected for full demonstrator radar; Phase III begins.
- By FY 2016:
 - Completed multi-faced, dual polarized antenna demonstrator; Phase IV begins – design and fabrication of final prototype.
 - Report documenting potential for improved tornado warnings produced in collaboration with NWS forecasters within the NOAA hazardous weather testbed (HWT).

Phase I & II: Dual Polarized Prototype:

- FY 2012: \$1 million to conduct research through Cooperative Institute to evaluate dual polarized designs; \$5M for design (by a contractor to be determined through competitive procurement).
- FY 2013: \$6 million for fabrication and demonstration of dual polarized PAR prototype (by a contractor to be determined through competitive procurement).

Phase III: Multi-Faced, Dual Polarized Prototype:

- FY 2014: \$6 million for contract preparation, design solicitation, and contract award for 5-6 contractors to design multi-faced PAR demonstrators
- FY 2015 – FY 2016: \$6 million for fabrication by two to three contractors to build multi-faced, dual polarized MPAR demonstrators (pre-prototypes).

Performance Goals and Measurement Data

Performance Goal:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Demonstrate Dual Polarization capability for Phased Array Radar Technology as part of MPAR risk reduction (% complete)	Target	Target	Target	Target	Target	Target
With Increase	0%	10%	50%	100%	100%	100%
Without Increase	0	0	0	0	0	0
Description: This measure tracks the completion of a polarized version of the MPAR (NWS requirement), which is a key step in the risk reduction process and in proving (or not) that MPAR is a viable alternative to the aging NWS/NEXRAD and FAA systems.						

Performance Goal:	FY	FY	FY	FY	FY	FY
Demonstrate multi-faced capability for Phased Array Radar Technology as part of MPAR risk reduction (% complete)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Increase	0%	0%	0%	10%	20%	50%
Without Increase	0	0	0	0	0	0
Description: This measure tracks the completion of the demonstration of multi-faced capability. It is a risk reduction element with respect to adding more than one antenna face to the demonstration PAR. Uncertainties to be investigated include how to handle weather events that cross from one antenna field of view to the second antenna field (continuity issue), how to process the radar data from each antenna face separately and simultaneously (to maximize processing speed leading to faster warnings), and how to allow each antenna face to operate independently with respect to radar beam scan strategies (to maximize concentration of effort on hazardous weather events and minimize time spent on non-hazardous events).						

Performance Goal:	FY	FY	FY	FY	FY	FY
Demonstrate improved tornado warning lead Time (minutes)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Increase	13	14	14	15	16	17
Without Increase	13	13	13	13	13	13
Description: This measure tracks the demonstrated improved tornado warning lead time. Using the demonstration PAR, forecasters within the Hazardous Weather Testbed issue mock tornado warnings to show that faster scanning (4x over existing NEXRAD) increases fidelity of developing hazardous weather events (e.g., tornadoes) and allows faster and more confident tornado warnings than can be issued with existing technology.						

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Office of Oceanic & Atmospheric Research
Subactivity: Weather and Air Quality Research

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	5,000
25.2 Other services	475
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	25
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	500
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	6,000

Weather & Air Quality Research Labs & Cooperative Institutes (Base Funding: 162 FTE and \$40,387,000; Program Change: +0 FTE and +\$25,000): NOAA requests an increase of 0 FTE and \$25,000 for a total of \$40,387,000 and 162 FTE to support existing program requirements within this subactivity but not provided for in the FY 2010 Consolidated Appropriations Act. This funding will support one half of a work year for a Cooperative Institute scientist to develop improvements in tornado modeling.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Office of Oceanic & Atmospheric Research

Subactivity: Weather and Air Quality Research

Object Class	2012 Increase
11 Personnel compensation	\$0
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	25
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	25

US Weather Research Program (USWRP) / THORPEX (Base Funding: 0 FTE and \$1,300,000; Program Change: -0 FTE and -\$1,300,000): NOAA requests a decrease of 0 FTE and \$1,300,000 to reduce the base funding for research activities associated with The Observing System Research and Predictability Experiment (THORPEX), for a total remaining program of 0 FTE and \$0.

Proposed Actions:

Recent research funded under THORPEX has focused on ensemble forecast systems and in improving the predictability of and reducing uncertainty associated with weather forecasts. The research has accelerated improvements in operational performance of numerical weather and ocean prediction and in the accuracy of atmospheric forecasts of the water cycle on timescales from hours to weeks. This research has also provided key information for the National Unified Operational Prediction Capability (NUOPC) under developed between NOAA, the Navy, and the Air Force.

When created, THORPEX was designed to be an international, multi-agency project ending in 2015. NOAA has worked closely with other federal agencies and international partners to support THORPEX since its inception. Although this successful project was scheduled to end in 2015, NOAA is eliminating its base contribution to this international effort several years earlier, as projects will be completed sooner than originally planned while still accomplishing much of proposed research. Although THORPEX projects will no longer receive USWRP funding starting in 2012, other NOAA programs will continue to support research to improve the accuracy of numerical weather and ocean predictions.

Statement of Need and Economic Benefits:

THORPEX is an international research and development program responding to the weather related challenges of the 21st century to accelerate improvements in the accuracy of one day to two week high impact weather forecasts for the benefit of society, the economy and the environment. THORPEX research topics include: global-to-regional influences on the evolution and predictability of weather systems; global observing system design and demonstration; targeting and assimilation of observations; and societal, economic and environmental benefits of improved forecasts. These topics still remain important areas of study for NOAA and will be pursued and funded by other NOAA programs.

Base Resource Assessment: OAR's base funding for THORPEX would be terminated.

Schedule and Milestones: None

Deliverables: None

Performance Goals and Measurement Data

Performance Goal:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
No. of probability tools developed or model changes made through the THORPEX program						
With Decrease	1	0	0	0	0	0
Without Decrease	1	1	1	1	1	1
Description: Use of ensemble computer models to improve numerical weather models, forecasts, and decision-making for the U.S, Mexico, and Canada.						

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Office of Oceanic & Atmospheric Research

Subactivity: Weather and Air Quality Research

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	-55
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	-12
25.1 Advisory and assistance services	-433
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	-800
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	-1,300

Weather & Air Quality Research Labs & Cooperative Institutes: Unmanned Aircraft Systems (UAS) (Base Funding: 4 FTE and \$6,000,000; Program Change: -0 FTE and -\$3,000,000):

NOAA requests a decrease of \$3,000,000 and 0 FTE for a total program of \$3,000,000 and 4 FTE to reflect the planned completion of the High-Altitude Long-Endurance (HALE) UAS testing and demonstration program. The UAS Program has identified and demonstrated several UAS technologies using various platforms and payloads. In particular, NOAA and NASA have successfully demonstrated the long range and endurance potential of high altitude UAS during FY 2010 with the first science flights of the Global Hawk flown from the NASA Dryden Flight Research Center in California to observe dust plumes from the Gobi Desert traversing the Pacific Ocean; polar vortex and ice conditions of the Arctic; and tropical cyclones in the Eastern Pacific, Atlantic, and Caribbean undergoing various stages of genesis, intensification, and dissipation. The results of the test observing missions over the Atlantic Ocean, Central Pacific, and the Arctic will be fully evaluated and assessed by the end of FY 2011. Preliminary results suggest UAS will provide significant benefit to a possible future expansion of NOAA's suite of observing capabilities as a technology which may be capable of expanding NOAA's observational reach with greater efficiency and less risk to human life than current methods. Development of a UAS strategic plan and business case for UAS acquisition and partnerships is underway. As a result, NOAA leadership will be able to make an informed decision about the desired level of access to and use of UAS technologies for achieving its science, service, and stewardship missions.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Office of Oceanic & Atmospheric Research

Subactivity: Weather and Air Quality Research

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	-100
22 Transportation of things	0
23.1 Rental payments to GSA	-50
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	-100
24 Printing and reproduction	-20
25.1 Advisory and assistance services	-400
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	-80
31 Equipment	-8
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	-2,242
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	-3,000

Nutrient & Mercury Speciation Measurement Stations (Base Funding: 0 FTE and \$650,000; Program Change: 0 FTE and -\$650,000): NOAA requests a decrease of 0 FTE and \$650,000. In the Consolidated Appropriations Act, 2010, Congress provided additional funds for evaluating nutrient and mercury air pollution, their impact on sensitive ecosystems, and measurement approaches. With these additional funds, NOAA collected detailed mercury measurements in West Virginia and in Pennsylvania to assess mercury transport and deposition and to evaluate low-cost approaches for measuring mercury deposition. In addition, NOAA collected ammonia (a common airborne nutrient) measurements with the intent of evaluating whether new instrumentation could be used to more effectively measure how ammonia moves between the land and the air. In FY 2012, the NOAA will utilize the measurements made by this project, but will not continue those measurement activities. In FY 2012, NOAA will continue to provide important information about air quality by supporting analysis of the observations previously collected to understand the sources of mercury that reach sensitive ecosystems, the impact of air quality policies, and the suitability of new approaches for measuring the exchange of mercury and ammonia between the land and atmosphere.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Office of Oceanic & Atmospheric Research
Subactivity: Ocean, Coastal, & Great Lakes Research

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	-300
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	-15
31 Equipment	-35
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	-300
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	-650

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APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH, AND FACILITIES

SUBACTIVITY: OCEAN, COASTAL, AND GREAT LAKES RESEARCH

The objectives of the Ocean, Coastal, and Great Lakes Research subactivity are to:

- Improve the protection, restoration, and management of coastal and ocean resources;
- Monitor ocean, coastal, and Great Lakes ecosystems, including coral;
- Support ecosystem modeling and forecasting;
- Encourage technology transfer and efficient resource management; and
- Increase the pace of discovery in unknown and poorly known areas of the world's oceans.

To achieve these objectives, OAR conducts research and monitoring activities supporting ecosystem management. This includes ecosystem research to analyze ecosystem management decisions and their outcomes; integrated observing and data management systems; outreach and education to improve public understanding and use of coastal and marine resources; partnerships for place-based ecosystem approaches to management; and international diplomacy, negotiation, and partnerships.

The Ocean, Coastal and Great Lakes Research subactivity develops innovative management tools through a better understanding of our ocean and Great Lakes habitats and resources. The research serves to increase our understanding of coastal and marine processes for the purpose of protecting and restoring ecosystems. Efforts include predicting, monitoring, and mitigating the effects of change on ecosystems (e.g., invasive species, human activities such as energy production, land-based sources of pollution, climate change).

More information on research in this subactivity is available at <http://www.research.noaa.gov/oceans/>.

LABORATORIES AND COOPERATIVE INSTITUTES

Great Lakes Research consists of integrated, interdisciplinary environmental research in support of resource management and environmental services in coastal and estuarine waters with a primary emphasis on the Great Lakes. The Great Lakes Environmental Research Laboratory (GLERL) performs field, analytical, and laboratory investigations to improve understanding and prediction of biological and physical processes in estuaries and coastal areas and their interdependencies with the atmosphere and sediments. GLERL emphasizes a systems approach to problem-oriented research to develop environmental service tools.

The **Vents Program** at the Pacific Marine Environmental Laboratory (PMEL) conducts ocean exploration and research directed toward understanding and predicting large-scale oceanographic processes and consequences of submarine volcanism and hydrothermal activity. Because the chemistry of the ocean is a result of these processes, they affect all marine ecosystems to some degree. Another important aspect of the program is to understand how submarine volcanic and hydrothermal processes create and, in major ways, sustain both living and non-living real and potential marine resources.

A new discovery has led to a third programmatic emphasis: understanding how submarine volcanic and hydrothermal activity contributes to the budgets and cycles of CO₂ in the marine environment. These processes may be relevant factors in ocean acidification and air-sea exchanges of this CO₂. The Vents Program is a leader in development of marine technologies that concentrate on seafloor observations. The Vents Program continues to be an internationally recognized pioneer in ocean exploration, which strengthens science at NOAA. It also serves as a major science and technology

resource for the NOAA Office of Ocean Exploration and Research. Vents base funds support PMEL Engineering and Information Technology functions, which are core PMEL laboratory capabilities that have provided significant advances in ocean observing and communications technologies, and support other critical NOAA objectives such as conducting research on the ocean and its impact on global climate and developing improved tsunami measurements and forecasts.

Ecosystems Fisheries Oceanography Coordinated Investigations (Eco-FOCI) is a collaborative research effort by scientists at PMEL and the Alaska Fisheries Science Center to improve the understanding of the productive ecosystems in the Gulf of Alaska, Bering Sea, and Arctic waters. These ecosystems support economically valuable fisheries (e.g. pollock, shellfish, and salmon). This research provides predictions and forecasts to the North Pacific Fishery Management Council which is responsible for allocating fish landings by commercial fishermen. PMEL research, combined with its year-round observing capability and the development of regional predictive ocean models and combined with NMFS ecosystem models, will make significant contributions to predictions beyond the seasonal range to ensure healthy ecosystems that support sustainable fisheries in the Alaska Large Marine Ecosystems. In addition, PMEL conducts research on Arctic climate change and its impact on ecosystems, including loss of Arctic summer sea ice.

The **Integrated Coral Observing Network (ICON) Program** at the Atlantic Oceanographic and Meteorological Laboratory (AOML) acquires and integrates near real-time data from in situ, satellite, radar, and other data sources at important U.S. and international coral reef ecosystems. These integrated data are used to develop ecological forecasts for Marine Protected Area (MPA) managers and researchers to understand and predict coral reef ecosystem response to climate change, such as coral bleaching, ocean acidification, harmful algal blooms, ocean current shifts, spawning, migration, and other marine phenomena. These growing, highly intensive, hourly data sets, currently collected from over 120 sites from around the world, are being used to establish status and long-term trends against which to measure climate change and to provide information essential for sound management decisions and long-term planning. With a diverse staff of oceanographers and marine biologists, AOML is able to use multi-disciplinary approaches to improve NOAA's management activities.

Ecosystem Research and Modeling conducts observational research and modeling to assess the impact on marine ecosystems and human and animal health from land-based sources of pollution and water use practices. Efforts include analysis of oceanographic, nutrient, and microbiological data in order to enable management decisions that protect coastal and marine ecosystems. Scientists work in cooperation with other NOAA Line Offices, other Federal, state, and local authorities (including the EPA and U.S. Army Corps of Engineers), and academia to maximize research knowledge for use in economically and environmentally important projects. For example, research and modeling efforts contribute to an integrated ecosystem assessment for South Florida ecosystem restoration that will serve to rate the success of remediation efforts and to guide the management process. Tools and technologies are developed, as needed, to meet analysis and modeling demands.

Schedule & Milestones:

2011 - 2013

- Data collection from long-term continuous time series of critical biophysical data from moored arrays in the Bering Sea.
- Field work in the Chukchi Sea (sponsored by DOI/BOEMRE) consisting of moorings and hydrographic surveys of the water column to evaluate changes in ice thickness and determine the relationships among climate change, ice thickness and biological productivity.

- Gulf of Alaska ecosystem assessment in coordination with the North Pacific Research Board and State of Alaska.
- Establish quality-controlled data set at the La Parguera, Puerto Rico, monitoring station to complement data set from the MAP- CO₂ buoy for OA characterization at Media Luna Reef.
- Establish first continuous annual hourly data compilation at Laolao Bay, Saipan, for utilization by Saipan's Coastal Resources Management division in characterizing that bay's ecosystem dynamics.
- Establish new monitoring station at Half-Moon Cay, Belize, as part of the new NOAA/CARICOM MOU, which has as its goal the establishment of a Caribbean-wide ocean and weather network (NOS has lead).

2011 – 2015

- Develop forecasts and models to support an expanding suite of integrated ecosystem status and health forecasts that provide coastal decision-makers better insight into the consequences of their actions in the context of societal needs and desires.
- Ecosystem assessment related to the South Florida Ecosystem Restoration Program.
- Ecological forecasting related to the Integrated Coral Observing Network Program.
- Research monitoring of nutrients and microbes in the coastal zone impacted by treated wastewater and inlet discharges as part of the Florida Area Coastal Environment Program.
- PMEL scientists will continue to explore and characterize new hydrothermal vent areas, primarily in the Pacific Basin, with actual locations dependent on external partner's needs and on scientific merits of proposed locations. For instance, Indonesia was explored in 2010; follow up activities in subsequent years in that region will depend on initial findings and on the ability to carry out research in this area. Acoustic research will be widespread around the world's oceans, especially in the Arctic and Antarctic, in conjunction with geophysical and biological questions. It is anticipated that the Vents seafloor volcano observatory (NeMO, located off the Oregon coast) will be connected to the new cabled observatory being developed by NSF. PMEL and Vents will play a major role in developing experiments and instrumentation in conjunction with this major NSF initiative.

2012-2015

- Synthesis of the Chukchi Sea data
- Ecosystem assessment for the Gulf of Alaska data synthesis phase.
- The Bering Sea Ecosystem Study will conclude the synthesis phase of its field work and begin development of an integrated ecosystem assessment.
- Continue to build upon long-term data sets begun at Puerto Rico, USVI, Port Everglades, Cayman Islands, and other sites.
- Work with Ocean Acidification partners to establish long-term complementary data sets at U.S. States & Territories outlined in their five-year plan.
- Continue to compile long-term data sets and ecological forecasts within ICON Network and in collaboration with other networks and programs.

Deliverables/Outputs:

- Coupled trophic model for use in ecosystem assessments.
- Technical documents and/or peer-reviewed manuscripts summarizing multi-year data sets of nutrient and microbiological concentrations in the coastal zone receiving land-based sources of pollution. Report results can be used to assess the performance of coastal outfall. Data can be used to support management and legislative decisions.

- The ICON program will integrate data and provide automated and validated ecological forecasts of coral bleaching. Historical field observations and ecosystem forecast models will be used to develop web-based products that forecast coral bleaching events.
- Annual Arctic Report Card
- Maintenance of the Bering Sea Climate and Ecosystem Observational Network
- Availability of quality controlled data from moorings, drifting buoys, and water column sampling (temperature, salinity, oxygen, fluorescence, nutrients, currents, zooplankton bio-volume, and atmospheric variables), peer-reviewed scientific publications, and advice to various Federally-sponsored decision-makers, such as the Endangered Species Biological Research Teams, the Committee of Scientific Advisors on Marine Mammals (U.S. Marine Mammal Commission), and the North Pacific Fisheries Management Council.
- Program deliverables include new discoveries related to seafloor volcanic eruptions and hydrothermal venting and their impact on ocean ecosystems. Deliverables will be the number of sites characterized each year and the number of scientific findings published in the scientific literature.
- Instruments will be developed to support Vents explorations and research, both from ship-based surveys and from the cabled observatory. Significant discoveries, when they occur, will be announced to the media, and research cruises will continue to provide blogs in real time to share the excitement of new findings. Reviews of the Vents scientific program will be completed by the external review team.

Performance Goals and Measurement Data

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Percent of labs that have had formal expert peer reviews in the past 4 years and were rated “effective” in terms of quality, mission relevance, and performance	Target	Target	Target	Target	Target	Target
	100%	100%	100%	100%	100%	100%
Description: This performance measure is recognized by the National Academy of Sciences report <i>Evaluating Federal Research Programs</i> , which states that “The most effective means of evaluating federally funded research programs is expert review.”						

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Number of coastal, marine, and Great Lakes ecosystem sites adequately characterized for management (Ecosystem Research & Modeling)	Target	Target	Target	Target	Target	Target
	4	4	4	4	4	4
Description: This performance measure for coastal sites characterized is intended to monitor environmental changes and impact of remediation efforts. Characterizations utilize periodic oceanographic (physical, chemical, and biological) and meteorological data derived by in-situ sensors. 120 stations are sampled bi-monthly via ship and small boat to characterize for management by public utilities the following four sites: FL Bay, FL Keys Reef Tract, SW FL Shelf (South Florida Ecosystem Restoration Program for SFL Ecosystem Restoration Management - as mandated by Congress) and the SE Florida Coral Reef Tract (Florida Area Environment Program)						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Number of tools, technologies, and information services that are used by NOAA partners/customers to improve ecosystem-based management (Ecosystem Research & Modeling)	4	4	4	4	4	4
Description: This performance measure is for the development and validation of molecular assays that focus on land- and human-based pollution sources. These assays are used by resource-managers to more effectively characterize coastal impacts and support management decisions. Customers include the EPA and other partners.						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Number of coastal, marine, and Great Lakes issue-based forecast capabilities developed and used for management (ICON Program)	11	11	11	11	11	11
Description: This performance measure is for the development and production of coral bleaching forecasts used to identify events and support management decisions. Forecasts are developed using oceanographic data from in-situ sensors at US sites (the Florida Keys National Marine Sanctuary, the La Parguera Estuarine Preserve, and the Salt River Bay National Historical Ecological Preserve, and Laolao Bay). Forecasts are produced hourly for 11 sites, therefore there are 264 forecast per day. For simplicity, this performance measure is parsed by site.						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Number of coastal, marine, and Great Lakes issue-based forecast capabilities developed and used for management (ICON Program)	60	60	60	60	60	60
Description: PM is for coral reef sites characterized to monitor environmental change. Characterizations utilize hourly oceanographic and meteorological data derived by satellite and in situ sensors.						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Cumulative number of coastal, marine, and Great Lakes ecosystem sites adequately characterized for management (Great Lakes Research)	10	15	20	25	30	35
Description: This performance measure is for Great Lakes sites characterized to monitor environmental changes. Characterizations utilize periodic oceanographic (physical, chemical, and biological) and meteorological data derived by in-situ sensors.						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Peer-reviewed journal articles published in the scientific literature (Eco-FOCI)	20	20	20	20	20	20

Description: Peer-reviewed publications are a recognized benchmark of scientific productivity related to Fisheries-Oceanography Coordinated Investigations (FOCI) research.

Performance Measure:	FY	FY	FY	FY	FY	FY
Number of papers published highlighting research results at hydrothermal vent sites (Vents Program)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	8	8	8	8	8	8

Description: Peer-reviewed publications are a recognized benchmark of scientific productivity related to VENTS activity. Technical reports are generated to provide additional data or distribute data and information in additional publication formats (e.g. for transmission to managers).

Performance Measure:	FY	FY	FY	FY	FY	FY
Number of coastal, marine, and Great Lakes ecosystem sites adequately characterized for management (Vents Program)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	3	3	3	3	3	3

Description: This performance measure is for Vents Program sites characterized to monitor environmental changes and impact of submarine volcanism and hydrothermal activity on large-scale oceanographic processes (e.g., carbon cycling, ocean circulation, ocean acidification). Characterizations utilize periodic chemical, biological, and geophysical data derived by in-situ sensors.

NATIONAL SEA GRANT COLLEGE PROGRAM (<http://www.seagrants.noaa.gov/>)

The National Sea Grant College Program (Sea Grant) is a national network of 32 programs dedicated to helping citizens utilize scientific information to support a vibrant economy while ensuring ecological sustainability. Sea Grant was established by Congress in 1966 to enhance the development, use, and conservation of the Nation’s marine and Great Lakes resources. The 32 state Sea Grant programs, located in every coastal and Great Lakes state and Puerto Rico and Guam, serve as the core of a dynamic national network of more than 300 participating institutions involving more than 3,000 scientists, engineers, outreach experts, educators and students. The Sea Grant network addresses key issues and opportunities in areas such as sustainable coastal development, hazard resilient coastal communities, safe and sustainable seafood, coastal ecosystem health, and adaptation to climate change. As a non-regulatory program, Sea Grant focuses on generating and disseminating science-based information to a wide range of groups including commercial and recreational fishermen, educators, fish farmers, state and local planning officials, port and harbor commissioners, seafood processors and retailers, and natural resource, water and environmental quality managers.

The Sea Grant model integrates research, outreach, and education. On-the-ground experts, located in every coastal and Great Lakes state, translate sound scientific information into tools, products and services that benefit coastal residents and their communities every day. Sea Grant experts implement national priorities at the local and regional level, while also identifying citizens’ needs in order to inform state, regional, and national research agendas. This two-way flow of services and information ensures that Sea Grant solutions meet demonstrated needs, help support businesses, and enable policy-makers to make balanced, well-informed decisions.

At the heart of this model are strong trust-based relationships anchored by Sea Grant's unique role as an honest broker of information (non-advocacy). Sea Grant's locally-based professionals (more than 360 extension agents strong) live in, and are intimately connected to, the communities they serve. As both trusted residents and coastal experts charged with providing balanced and reliable science-based information, Sea Grant personnel are effective in delivering relevant solutions to coastal residents.

Sea Grant's program activities fall into the following four focus areas and two cross-cutting efforts:

- *Hazard Resilience in Coastal Communities* – Sea Grant objectives are to: 1) Promote widespread understanding: Assess short and long-term risk for residents and businesses and ensure that forecast and other information is available and useful to help save lives; 2) Increase capacity: Help communities plan to reduce risk, pinpointing vulnerabilities and using technologies to prepare for and mitigate hazards; and 3) Ensure an effective response to coastal catastrophes: Make products and services available to support crisis decision-making, mobilize our network to provide rapid response strategies, and partner with emergency responders. Sea Grant's base budget is expanded in the FY 2012 President's Budget to allow for the program to expand its community based hazard resilience efforts. This cross-cutting effort focuses on a variety of natural and technological hazards (including climate change). These efforts will complement each other, with the hazards portion targeting the socio-economic impacts of climate change on communities.
- *Sustainable Coastal Development* – Sea Grant objectives are to: 1) Strengthen local economies: Provide science-based information and techniques that enhance waterfront economic activities while sustaining the natural coastal environment; 2) Ensure public access: Preserve and enhance public access to the Nation's beaches and waterfronts through access-related needs assessments, legal analysis, and technical assistance; and 3) Support sustainable planning: Engage coastal communities and decision-makers in planning processes that identify and pursue sustainable economic development policies and programs.
- *Safe and Sustainable Seafood Supply* – Sea Grant objectives are to: 1) Ensure the sustainability of fisheries: Engage harvesters, recreational fisherman, producers and managers in ways to minimize threats, and enhance the productivity and management of wild fisheries; 2) Support a viable domestic seafood industry: Provide innovative approaches and techniques that ensure financial competitiveness and environmental responsibility; and 3) Ensure the health and safety of seafood: Enhance training and technical assistance programs related to the application of standards for safe domestic and imported seafood.
- *Healthy Coastal Ecosystems* – Sea Grant objectives are to: 1) Support ecosystem-based approaches to managing the coastal environment: Increase the capacity of managers to consider the entire ecosystem; 2) Restore the function and productivity of degraded ecosystems: Identify and evaluate innovative policies, technologies, and methods to restore the services provided by our Nation's ecosystems; and 3) Promote stewardship of healthy ecosystems: Provide life-long learning programs that enhance understanding of coastal, ocean, and Great Lakes environments and the services they provide.
- *Climate Change Adaptation* – Sea Grant objectives for this cross-cutting area are to: 1) Improve understanding: Help citizens and decision-makers understand climate change processes and the expected effects on coastal resources and communities; 2) Increase

capacity of coastal communities to respond to climate change: Identify viable strategies and formulate plans to prepare for, mitigate and adapt to these impacts.

- *Education* – Sea Grant objectives for this cross-cutting area are to: 1) Provide national leadership in marine literacy for grades K-12: Develop innovative science curricula and teacher training programs, and embrace new technologies to enhance learning; 2) Develop professionals who understand marine and aquatic science: Recruit and train undergraduate and graduate students to deal with coastal economic and environmental challenges. Support the Knauss Marine Policy Fellowship that brings highly qualified graduate students with an interest in national policy decisions affecting natural resources to Washington to work for one year in government.

Program Evaluation – Sea Grant has implemented a rigorous four-year external performance review process for its federally sponsored university-based state programs. Performance review teams are comprised of highly experienced, distinguished, knowledgeable individuals. Performance is judged quantitatively using performance benchmarks and metrics that were developed with the help of outside experts. Foremost among these benchmarks is a program's impact on mission and programmatic objectives as well as its connection with users of science-based information. Individual program performance is used to determine merit-based funding for each state program.

Aquatic Invasive Species Program (AIS)

Aquatic invasive species disrupt the stability of coastal ecosystems, thereby affecting recreational, economic, and other beneficial uses of coastal resources. They constitute one of the largest present and future threats to coastal ecosystems and economies, and they have been responsible for some of the most dramatic fishery losses in recent times (e.g., Lake trout, turbot, whitefish, and salmon in the Great Lakes). Hundreds of millions of dollars are spent each year to mitigate the effects of invasive species and to prevent new invasions.

The AIS program provides critical support to national, regional and state efforts to manage invasive species, including: development of new control technologies, research into identification, assessment, and management of the risk of new invasions, education and outreach on how businesses, communities, and individuals can prevent invasions or effectively respond to them. This support is targeted at issues of highest local, state and national importance, as identified in peer- and publically-reviewed state invasive species management plans, fishery council ecosystem management plans, and other sources.

The AIS Program involves cooperation and coordination between state and local governments, NOAA and other Federal agencies, the academic community, and other organizations and individuals. This program is a critical component of the Department of Commerce's support of the interagency Aquatic Nuisance Species Task Force (which NOAA co-chairs) and National Invasive Species Council (which DOC co-chairs). The AIS program responds to the mandates identified in the National Aquatic Nuisance Prevention and Control Act, the National Sea Grant College Program Act, and Executive Order 13112.

Marine Aquaculture Program

The United States faces a seafood deficit amounting to greater than \$8 billion annually. Currently, more than 80 percent of the U.S. seafood supply is imported, and about half of these imports are from aquaculture. Marine aquaculture in U.S. waters has the potential to help meet the growing demand for domestic seafood, in addition to assisting in rebuilding some fishery stocks. Sea Grant, in concert with the rest of the NOAA Marine Aquaculture Program, is at the forefront of efforts to grow

the U.S. marine aquaculture industry through an integrated program of research, education, and technology transfer that is focused on key scientific, engineering, environmental, and socioeconomic issues that currently inhibit this emerging industry.

Sea Grant works with other NOAA line offices (NMFS, NESS, NOS) to support NOAA's efforts to increase the domestic production of safe and sustainable seafood via aquaculture in ocean, coastal, Great Lakes areas. Environmentally and economically sustainable aquaculture helps meet the increasing demand for seafood, creates and sustains jobs and stabilizes economies in coastal working waterfronts, and supports efforts to manage and rebuild wild fish stocks. Sea Grant addresses sustainable aquaculture by funding competitive extramural research and transferring research and technology via the Sea Grant education and extension network. Sea Grant competitively funds external partners to promote sustainable aquaculture by: developing new species suitable for aquaculture; field-testing new environmentally compatible production systems to mitigate the environmental impacts of aquaculture; developing new technologies, including offshore, near-shore, and re-circulating aquaculture systems; improving and clarifying the regulatory framework and coastal zoning for aquaculture; addressing sociological and economic issues related to aquaculture; and providing coastal planning tools to site aquaculture facilities. In addition, Sea Grant develops collaborative studies with international partners on ecosystem effects for aquaculture in coastal ecosystems. NOAA's aquaculture education and extension network facilitates the transfer of research into business operations, as well as informs the public and practitioners about key issues and information related to aquaculture. Sea Grant's aquaculture extension agents, who live and work in coastal communities, promote an environmentally friendly and profitable aquaculture industry that will alleviate stress on natural fish stocks, create jobs, provide healthy protein to Americans at a reasonable cost, improve food safety, and help alleviate our Nation's trade deficit.

Schedule & Milestones:

By FY 2012:

- Fifteen individuals will be trained in marine aquaculture and/or direct marketing business practices.

By FY 2014:

- Create and transfer at least 80 tools/technologies to coastal managers.
- Complete training of over 3000 seafood processors in HACCP.
- Restore over 2,800 acres of degraded ecosystems.
- Engage over 550 coastal communities in activities (e.g. visioning, resource inventories, analysis of development policies) that address the sustainability of economic and environmental resources.
- Provide 150,000 coastal resource managers with information/training in local hazard resiliency, and hazard mitigation tools, techniques, and best practices.

By FY 2015:

- Assist 200 coastal communities adopt smart growth principles.

Deliverables/Outputs:

By FY 2016:

- 2.4 million resource managers, decision-makers, and the general public will have attended Sea Grant sponsored/organized conferences, workshops and meetings.
- Sea Grant will have leveraged nearly \$200 million.
- 4,200 peer-reviewed journal articles/book chapters.
- 3,600 graduate students supported.
- 900 students will have received PhD or MS/MA degrees with Sea Grant assistance.
- 15,600 conferences, workshops and meetings sponsored /organized by Sea Grant.

Performance Goals and Measurement Data

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Percent of Sea Grant College Programs that have had formal expert peer reviews in the past 5 years and were rated "effective" in terms of quality, mission relevance, and performance	Target	Target	Target	Target	Target	Target
	100%	100%	100%	100%	100%	100%
Description: This performance measure is recognized by the National Academy of Sciences report <i>Evaluating Federal Research Programs</i> that states "The most effective means of evaluating federally funded research programs is expert review."						

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Cumulative number of fishermen, resource managers, consumers and seafood businesses (harvesters, aquaculturists, processors and recreational fishermen) who modify their practices using knowledge gained in fisheries sustainability, seafood safety, and the health benefits of seafood	Target	Target	Target	Target	Target	Target
	125,000	150,000	175,000	200,000	225,000	250,000
Description: This measure tracks Sea Grant success in having stakeholders adopt responsible fishery practices. Stakeholders who recognize the value of responsible use are more likely to adopt such practices. For example, Sea Grant efforts to educate fishermen on the benefits of using circle hooks as an alternative to j-hooks has decreased bycatch and increased the survival of hooked and released fish. Responsible harvesting and processing techniques and practices include measures to minimize bycatch and habitat destruction, ensure seafood safety, and support sustainability.						

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Cumulative number of coastal communities that have adopted / implemented sustainable (economic and environmental) development practices and policies (e.g., land-use planning, working waterfronts, energy efficiency, climate change planning, smart growth measures, green infrastructure) as a result of Sea Grant activities	Target	Target	Target	Target	Target	Target
	175	275	340	400	460	510
Description: This metric tracks communities that have made strides in sustainable development with Sea Grant aid – moving beyond analysis and planning and into implementation.						

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Cumulative number of coastal communities that adopt/implement	Target	Target	Target	Target	Target	Target

hazard resiliency practices to prepare for and respond to/minimize coastal hazardous events

190	290	440	500	550	600
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Description: This metric tracks Sea Grant’s contribution to individuals, businesses, and communities that develop comprehensive emergency preparedness and response plans to increase their resiliency and enable them to respond effectively. Sea Grant will contribute to this by building a sound knowledge base to improve forecasting capabilities, by identifying development and best management practices that reduce the vulnerability of people, buildings and businesses to coastal hazards, and by advancing ways communities can manage and recover from these events when they occur.

OCEAN EXPLORATION AND RESEARCH (<http://explore.noaa.gov/>)

The Office of Ocean Exploration and Research (OER) connects NOAA’s exploration mission activities with targeted undersea research aimed at providing the foundation of information necessary to support NOAA’s management responsibilities. The efforts undertaken by OER represent a continuum that begins with exploration and discovery, and ultimately results in scientific understanding applied to real world management solutions. OER provides NOAA and the Nation with a unique capability to explore new ocean areas and phenomena as well as a means to align purposeful and focused research with important discoveries. OER collects the information required to identify new ecosystems, habitats, and resources, as well as to conduct the research necessary to gauge their health, determine how they function and change over time, and to understand how human activities may affect their long-term stability. In addition, OER investigates newly observed ocean phenomena such as underwater volcanic eruptions, and ensures that data and information are made available to scientists and decision-makers working on significant environmental challenges such as climate change and ocean acidification.

OER core activities include (1) supporting interdisciplinary expeditions to characterize new ocean areas and phenomena; (2) conducting cutting edge transformational research to address National priorities and to identify new and emerging issues; (3) working with partners to develop new underwater technologies focused on increasing the pace and efficiency of ocean exploration and research; and (4) engaging a broad spectrum of stakeholders and audiences through education and outreach. OER is comprised of two unique programs: the Ocean Exploration Program (OE), and the National Undersea Research Program (NURP).

Ocean Exploration Program (OE)

The Ocean Exploration Program was created in 2001 in response to the recommendations of the President’s Panel on Ocean Exploration, and NOAA is currently the only Federal agency with a dedicated program for exploring unknown and poorly known ocean areas and phenomena. Specifically, OE efforts focus on the first step of the scientific process – initial investigation of the unknown to characterize natural features and phenomena. Areas to be explored are identified by working with other NOAA programs and Federal agencies, as well as the academic community, and emphasis is given to areas where there is consensus that the potential for discovery is high.

Results from OE efforts include a variety of products such as maps and geospatial databases and models, inventories and samples of living and non-living marine resources, oceanographic and atmospheric data, multimedia products such as video and still images, and peer-reviewed reports and journal articles. These results provide a critical baseline of knowledge which serves to catalyze new lines of research and inquiry, support management decisions at multiple scales, and improve

ocean literacy and stewardship through education and outreach. OE accomplishes its mission in the following distinct ways:

- Core Exploration Program: OE provides funding through grants and intra- and interagency transfers to interdisciplinary teams of scientists through an annual announcement of opportunity and competitive peer-review proposal process. Thus, these efforts have very specific objectives and the principle investigators bear the responsibility of delivering the data and results within two-years after the grant is approved. Current areas of investment include exploring natural environments and phenomena, searching for and identifying shipwrecks and submerged paleo-landscapes once inhabited by humans, and development of advanced underwater technologies. OE also provides funding through grants to support the development of education and outreach products that draw from the exploration expeditions. Finally, OE uses contracts and interagency transfers to secure keys assets such as ships and submersibles to support the proposals that are selected.
- NOAA Ship *Okeanos Explorer*: In FY 2005, Congress directed the U.S. Navy to transfer the 224 foot survey vessel USNS Capable to NOAA for conversion to the Nation's first vessel dedicated to exploring the ocean. Renamed the *Okeanos Explorer*, the vessel was outfitted to support three primary missions: (1) deep ocean high-resolution mapping; (2) deep water high-definition filming and sampling using a sophisticated dual-body remotely operated vehicle (ROV); and (3) a satellite-based broad-band transmission "telepresence capability, which will allow teams of scientists to lead expeditions from shore-based "Exploration Command Centers (ECC)." Unlike the efforts funded through peer-review, the *Okeanos Explorer* systematically explores unknown areas and delivers data and a standard suite of products to scientists and educators on shore in real-time, as well as soon after an expedition is completed. The missions undertaken by the *Okeanos Explorer* provide a foundation of information to support a multitude of projects and interests.

With the new ship came new responsibilities for OE to invest in dedicated mission equipment and upkeep, the personnel to operate the mission systems, managing the data and information acquired, and developing and delivering the data and products. OE also uses funding to compensate scientists for time spent in leading expeditions from the shore-based ECCs.

- Partnership Projects: OE invests in a variety of small- and large-scale projects with Federal and non-Federal partners who have a shared interest in ocean exploration, as well as funding they can apply to leverage the OE investment. The following three examples highlight large-scale, multiyear exploration partnerships:
 - Telepresence: In June 2009, the University of Rhode Island (URI) and the Institute for Exploration (IFE) opened the "Inner Space Center" (ISC) at URI's Narragansett Bay campus. The ISC is equipped to receive data and information from the *Okeanos Explorer* and transmit it to the shore-based ECCs, which are staffed by teams of scientists and educators. The ISC also is equipped with a full production studio that provides for conducting live events during expeditions, as well as the development of post-processed videos and other products. The University of New Hampshire also partners in this endeavor and has a sophisticated ECC at their Integrated Ocean and Coastal Mapping facility that is dedicated to acquiring, processing, and developing products from the multibeam mapping system on the *Okeanos Explorer*.
 - Extended Continental Shelf Mapping (ECS): In FY 2007, OE joined an interagency task force formed under the Interagency Committee on Ocean Science and

Resource Management (ICOSRMI) to plan and prepare for new investments in field surveys to identify potential extensions of the U.S. Exclusive Economic Zone (EEZ) using the criteria set forth in Article 76 of the UN Convention on the Law of the Sea, which defines how coastal States may define their ECS. In collaboration with several Federal agencies, OE invests funds to support bathymetric mapping, geophysical and seismic surveys, data management and analysis, and the development of products to help define the ECS. In addition to mapping unknown territory, information on habitat and resources is also being collected.

- *National Ocean Partnership Program (NOPP)*: Under the auspices of NOPP, OE has partnered with the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) over the past several years to investigate and characterize offshore BOEMRE lease blocks in advance of BOEMRE decisions on oil and gas exploration and development. These efforts have focused on the Gulf of Mexico, and will be extended to the Mid-Atlantic region. Under this partnership, BOEMRE funds peer-reviewed scientific investigations and OE provides the ships and submersible. Both BOEMRE and NOAA benefit from the information that is collected.

National Undersea Research Program (NURP)

The National Undersea Research Program (NURP) was created in 1980 based on National Academy of Sciences Report recommendations that NOAA support undersea research facilities through partnerships with universities or oceanographic institutions. Through this model, NURP leverages the skills and resources of its academic partners to meet NOAA undersea research requirements. The NURP mission is to place scientists underwater - either directly through the use of submersibles and diving techniques, or indirectly using remote and autonomous technologies – to support underwater research necessary to further our understanding of ocean ecosystems, their resources, how they function, and the impact of human activities.

The NURP mission complements the OE mission and focuses on the subsequent stages of the scientific process. Specifically, this includes (1) providing access to facilities, equipment, technologies, information, and expertise to support undersea research efforts by institutions of higher education and other educational marine and ocean science organizations; (2) development, testing, and transition of advanced undersea technology associated with ocean observatories, submersibles, advanced diving technologies, remotely operated vehicles, autonomous underwater vehicles, and new sampling and sensing technologies to support NOAA's research mission and programs; (3) conducting transformational, cutting-edge marine research that follows up on discoveries; and (4) conducting mandated studies of underwater diving techniques and equipment suitable for protection of human safety and improvement in diver performance.

The NURP network is currently comprised of an East Coast Cooperative Institute for Ocean Exploration, Research, and Technology (CIOERT), the Aquarius Reef Base (University of North Carolina, Wilmington), the Hawaii Undersea Research Lab (HURL), and the West Coast and Polar Regions (WCPR) Undersea Research Center, which receive funding in accordance with Public Law 111-11 Title XII Subtitle A Part II – NOAA Undersea Research Program Act of 2009. Regional center funding is distributed equally (50 percent) to east and west coast centers, and program administration support is set at 10 percent of the appropriation.

- CIOERT focuses on identifying and investigating habitats on the eastern continental shelf and slope, developing new sensors and systems to support underwater research, and works closely with the NOAA Coral Reef Conservation Program on research efforts associated with deep and shallow water coral ecosystems in response to management needs.

- The University of North Carolina, Wilmington, operates the NOAA-owned Aquarius Undersea Laboratory, the world's only research saturation facility, to conduct marine ecosystem and coral research, undersea technology testing, training and outreach.
- The Hawaii Undersea Research Laboratory operates the Pisces IV and Pisces V, which are 2000m depth capable submersibles to support studies on the effect of invasive species on black coral habitats, assess Pacific monument and fisheries habitats, and survey marine cultural heritage resources (NOAA owns Pisces V).
- The WCPR at the University of Alaska, Fairbanks supports development of sensors for extreme environment (undersea and high latitude) studies, and development and use of miniature oceanographic data recorders carried by marine mammals and other pelagic species.

In summary, the Ocean Exploration Program provides the Nation with a one-of-a-kind capability focused on discovering and characterizing ocean areas and phenomena that we currently know nothing about. Through interdisciplinary expeditions and projects, the program maximizes the potential for discovery of new ecosystems and habitats, as well as new living and non-living marine resources. Such knowledge is fundamental for managing ocean areas in a sustainable manner, and serves to increase our understanding of earth system processes.

Complementing this, NURP provides a long established connection to the external academic community, which augments NOAA's internal management-oriented research capabilities. NURP allows the academic community to collaborate on large-scale, long-term research efforts, helping NOAA and the Nation transition discoveries to refined research, and ultimately management. Furthermore, the NURP network provides scientists access to specialized and unique tools and technologies not available within NOAA, as well as the ability to work in concert with the academic community to evolve these technologies to meet new demands.

Schedule & Milestones:

- One to two BOEMRE-NOAA Partnership joint expeditions per year to explore and characterize habitats and ecosystems in deep water areas.
- Lead an extramural program in support of new tools and technologies (specific to sensor development) associated with ocean acidification.
- The *Okeanos Explorer* will explore unknown and poorly known regions in the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea beginning in 2012.
- Develop annual extramural competition for an OER exploration and discovery missions.
- Develop annual extramural competition for an OER Marine Archaeology program.
- Develop peer-reviewed and approved professional education products for use in local, regional, and national curricula for Ocean Exploration Signature Mission.
- During FY 2011 - 2012, One joint NOAA-BOEMRE exploration and characterization of habitats in deep waters of the Mid-Atlantic Bight.
- By FY 2012, *Okeanos Explorer* will be home-ported in Narragansett Bay, RI.
- During FY 2010 - 2016, Release annual OER Ocean Exploration announcement of opportunities.
- During FY 2010 - 2016, Release annual OER Marine Archaeology program announcement of opportunities.

- During FY 2010 - 2016, prepare one set of peer-reviewed and approved set of education products per Ocean Exploration Signature Expedition.

Deliverables/Outputs:

- Develop undersea technology tools to advance exploration, research, and measurement of ocean characteristics.
- Conduct targeted research to follow-up and transition discoveries to management and operations.
- Explore, map and visualize maritime wrecks and paleo-landscapes.
- Conduct systematic exploration, mapping and characterization of unknown areas in national and international waters using the NOAA Ship *Okeanos Explorer* and provide information and products to multiple users through telepresence links.
- Conduct Autonomus Underwater Vehicle (AUV) mapping and habitat characterization surveys.
- Develop peer-reviewed and approved professional education products for use in local, regional, and national curricula for Ocean Exploration Signature Mission.
- Complete BOEMRE-NOAA Partnership Joint expeditions to explore and characterize habitats and ecosystems in deep water areas.

Performance Goals and Measurement Data

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Annual number of coastal, marine, and Great Lakes ecosystem sites adequately characterized for management	Target	Target	Target	Target	Target	Target
	6	6	6	6	6	6
Description: Conduct joint expeditions with DOI's Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) to explore and characterize habitats and ecosystems in deep water areas of the Gulf of Mexico and the Mid-Atlantic Bight.						

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Develop undersea technology tools (to advance exploration, research, and measurement of ocean characteristics)	Target	Target	Target	Target	Target	Target
	1	1	1	1	1	1
Description: OER will be a NOAA and national focal point for the design, development, deployment, testing, evaluation, application, and transition to operational status of new marine technologies including instrument systems, sensors, and platforms.						

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Conduct targeted research to follow-up and transition discoveries to management and operations	Target	Target	Target	Target	Target	Target
	6	6	6	6	6	6
Description: Research within OER will be conducted by means of targeted efforts implemented by the long term extramural partnership enterprises as well as through grants solicited and funded by OER.						

Performance Measure:	FY	FY	FY	FY	FY	FY
Conduct mapping and ecosystem surveys per ECS task force directives	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	2	3	3	3	0	0
Description: The Extended Continental Shelf mapping (ECS) effort is a high-level interagency multi-year effort to define the potential extension of the US continental shelf under international law. In essence, once the US accedes to the UN Law of the Sea and this work is completed, it has the potential to more than double the size of the continental shelf under US jurisdiction - an area larger than our terrestrial lands.						

Performance Measure:	FY	FY	FY	FY	FY	FY
Conduct regional analysis of potential ECS based on data collected during surveys	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	0	1	2	2	2	0
Description: The ECS effort is a high-level interagency multi-year effort to define the potential extension of the US continental shelf under international law. In essence, once the US accedes to the UN Law of the Sea and this work is completed, it has the potential to more than double the size of the continental shelf under US jurisdiction - an area larger than our terrestrial lands.						

Performance Measure:	FY	FY	FY	FY	FY	FY
Explore, map and visualize maritime wrecks and paleo-landscapes	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	4	4	4	4	4	4
Description: OER Marine Archaeology program explores and discovers maritime heritage sites significant to American and World history using the latest in advanced technology. Sites include shipwrecks, prehistoric submerged landscapes, and other maritime cultural sites. The program supports the research and protections standards enumerated in the UNESCO Convention on the Protection of the Underwater Cultural Heritage.						

Performance Measure:	FY	FY	FY	FY	FY	FY
Conduct systematic exploration, mapping and characterization of unknown areas in national and international waters using the NOAA Ship <i>Okeanos Explorer</i> and provide information and products to multiple users through telepresence links (Number of unknown areas characterized, mapped, and explored)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	6	8	8	8	8	8
Description: The <i>Okeanos Explorer</i> offers a new approach to discovery: systematic exploration. This approach includes: (a) telepresence, the ability to bring scientific expertise virtually to the vessel through live connections between shore and sea, (b) a next-generation multi-beam sonar system, and (c) a highly sophisticated, remotely-operated vehicle (ROV). The three key elements work together seamlessly: the ship's telepresence system delivers live images from the ship's dedicated ROV as well as maps from its multi-beam sonar to support live interactions between dedicated centers located throughout the world and the <i>Okeanos Explorer</i> .						

Performance Measure:	FY	FY	FY	FY	FY	FY
Conduct AUV mapping and habitat characterization surveys	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	2	2	2	2	2	2
Description: Autonomous Underwater Vehicles (AUVs) provide NOAA with a capability that significantly improves on its ability to collect marine observation data for all of its mission areas. AUVs will provide a broad and synoptic view of our ocean and marine environments that meets tomorrow's needs of government, environmental managers, scientists, business, and the public. OER utilizes and manages AUVs through its extramural partners, and leads in the development of new technologies and approaches for the efficient use of NOAA AUVs.						

Performance Measure:	FY	FY	FY	FY	FY	FY
Prepare peer-reviewed and approved professional education products for use in local, regional, and national curricula to enhance ocean science and literacy	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	8	8	8	8	8	8
Description: Education and outreach to school children and the public are essential elements of the program to convey the importance of protecting these irreplaceable resources. OER's education program covers workshops to teach the teachers, and provide a wide variety of lesson plans through the award- winning website: http://oceanexplorer.noaa.gov/ .						

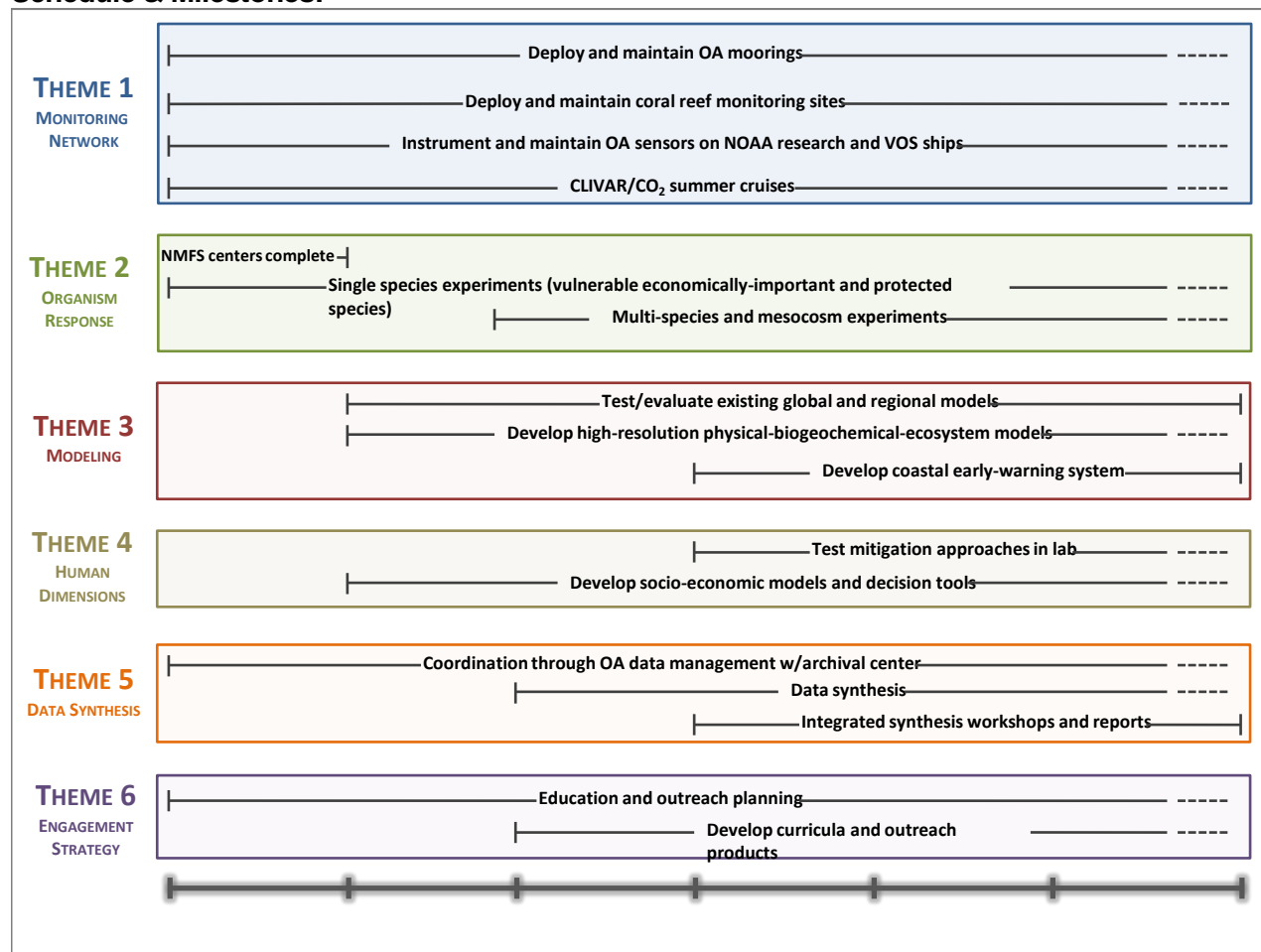
OTHER ECOSYSTEMS PROGRAMS

Integrated Ocean Acidification (OA)

NOAA is poised to lead the national effort in understanding the impact of ocean acidification (OA) on the Earth's environment and to conserve and manage the impacted marine organisms and ecosystems in U.S. marine and Great Lakes waters. The ocean acidification research field is young, and little is known about how ocean acidification will affect marine resources, ecosystem services, and the ocean economy. There is solid evidence, however, that some marine ecosystems are presently exposed to corrosive, or acidified, waters and the impact to the nation's economy could be significant. Both of these findings highlight the urgency of this problem and the significant research need. NOAA's investment in the research described in the NOAA OA Implementation Plan will accelerate understanding to a pace that can adequately inform national and international climate mitigation and adaptation decision-making that will best conserve marine ecosystems and sustain the critical services that oceans, coastal, and Great Lakes ecosystems provide to the national economy

OA activities will include (1) development and deployment of advanced technologies and sensors on mooring platforms in the Pacific, Atlantic, and Gulf of Mexico to conduct physiological assessments of OA on commercial and recreational important species; (2) establishing a coral reef monitoring network, as well as carbonate analytical capabilities to ensure consistent sampling and measuring methods and long term monitoring of coral reefs; (3) field and laboratory organism response experiments conducted by NMFS as identified in OAR's Implementation Plan; (4) development of new technologies and ecosystem monitoring systems including better models and dedicated research programs on physiological and ecosystem-level responses; (5) development of ecosystem/socioeconomic models; (6) coordination of OA monitoring and impacts research with other Federal, national and international ocean science bodies; and (7) providing grants for critical research projects, and encouraging coordination with other participating agencies under the National Oceanographic Partnership Program.

Schedule & Milestones:



Key:

--- Denotes a task/activity likely to continue beyond FY2016.

Deliverables/Outputs:

- Standardized chemical and biological monitoring protocols for the measurement of CO₂ system parameters and physiological effects on marine organisms;
- New technology that allows for accurate, in-situ measurements of the carbon system throughout the water column and is adapted for use on a variety of platforms (i.e., ships, moorings, floats and gliders);
- Monitoring program that will quantify the status and trends in ocean acidification and effects on marine and Great Lakes species;
- Predictions of pH and carbonate saturation in the future ocean using global climate change model projections;
- Comprehensive evaluation and characterization of the threat ocean acidification poses by resolving the direct and indirect ecological impacts to economically-important species and NOAA-managed protected species;
- Regional biogeochemical and ecological models developed through the synthesis efforts of existing models and the incorporation of new knowledge gained on the impact of ocean acidification;

- Retrospective perspective on past observed variations in the ocean chemistry using historical data, paleoceanographic studies, and multidecadal hindcasting;
- Accurate socio-economic forecasts that will estimate how ocean acidification will affect the public and the economy through impacts on ecosystem services;
- Recommended atmospheric limit for CO₂ based on projected losses of marine resources, ecosystem services, and economic losses due to the degree of ocean acidification at different CO₂ emission scenarios;
- Decision support tools and requisite scientific knowledge for understanding and responding to ocean acidification in support of ecosystem based management and other related management schemes, such as fisheries management and coastal and marine spatial planning;
- Ocean acidification data archival in a national ocean acidification information center;
- Public web access to a national ocean acidification information portal; and
- Educational and outreach products and services (e.g., aquarium and museum exhibits, interactive website, K–12 curriculum, informational and training workshops, short web documentaries, summary literature, community lecture series, and interpretive signage) to increase the dialogue among scientists, policy-makers, teachers, and the public.

Performance Goals and Measurement Data

Performance Measure:	FY	FY	FY	FY	FY	FY
Improve confidence of the impacts of ocean acidification for each large marine ecosystem studied (<i>IPCC reports</i> * % Low - High ratings)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	5%	10%	20%	40%	60%	60%
Description: The uncertainty is a designated level of understanding assessed by a panel of NOAA investigators with regards to the anticipated impacts of ocean acidification on each of the ten Large Marine Ecosystems (LME) based upon the IPCC criteria (including likelihood and confidence). This designation is evaluated on an annual basis and expresses an aggregate of the uncertainties associated with each of the critical LME's facets posited to be impacted by ocean acidification.						

* From the IPCC Third Assessment Report: "An explicit uncertainty range is a likely range. Estimates of confidence are: very high (95 %); high (67-94 %); medium (33-66 %); low (5-32 %); very low (< 5 %).

Performance Measure:	FY	FY	FY	FY	FY	FY
Number of sites with mean annual ocean acidification index (Aragonite Saturation State) determined to be within 0.2 units	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	10	15	20	25	30	30
Description: This measure represents an annual inventory of in situ-based fixed and underway observing platforms dedicated to monitoring the rate, magnitude, and dynamics of ocean acidification in response to increasing atmospheric carbon dioxide. These ocean acidification observing platforms are defined by their inherent ability to fully constrain the carbonic acid system and must be capable of resolving decadal changes in ocean chemistry in response to ocean acidification.						

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PROGRAM CHANGES FOR FY 2012:

Ocean Exploration & Research: *Okeanos Explorer*: ROV and Telepresence (Base Funding: 2 FTE and \$4,300,000; Program Change: +0 FTE and +\$1,500,000): NOAA requests an increase of \$1,500,000 and 0 FTE for a total of \$5,800,000 and 2 FTE to provide the scientific and technical support to operate the dedicated mission equipment that is permanently installed on the NOAA Ship *Okeanos Explorer*, and to provide additional days-at-sea to increase the reach and scope of telepresence activities. Specifically, this overall program will support: (1) operation of the telepresence technology which enables scientists, educators, and others to participate and lead ocean exploration missions from remote shore-based Exploration Command Centers (focus for the new funding, including additional days-at-sea) and (2) the operation and upgrade of the ship's dedicated science platforms (autonomous and remotely-operated vehicles).

The Office of Ocean Exploration and Research (OER) activities address the following Goals of NOAA's 5 Year Research Plan for 2008-2012:

- Advancing understanding of ecosystems to improve resource management
- Exploring our Oceans
- Advancing in-situ and surface-based data collection capabilities and associated platforms and systems.

Proposed Actions:

The *Okeanos Explorer* offers a new systematic approach to discovery and exploration which includes the following key elements:

- (a) telepresence, the ability to bring scientific expertise virtually to the vessel through live connections between shore and sea;
- (b) a next-generation multi-beam sonar system; and
- (c) a highly sophisticated, remotely-operated vehicle (ROV).

These three elements work together seamlessly. The ship's telepresence system delivers live images from the ship's dedicated ROV as well as maps from its multi-beam sonar to support live interactions between the *Okeanos Explorer* and five dedicated command centers located on both coasts of the United States and in Jakarta, Indonesia.

On a traditional research expedition, a small number of specialized principal investigators sail with the ship to direct ROV operations, convey new potential discoveries or findings to others using e-mail or satellite phones, and wait for a response. Connecting the ROV to the telepresence technology allows high-definition images and sensor data to be transmitted directly from the ROV's cameras to shore-based ECCs in near real time, using dedicated high-bandwidth internet communication channels. In the ECCs, scientists can communicate with the ship, direct operations of the ROV, and seek opinions and guidance from hundreds of specialized scientists that have agreed to participate in the program. By adding increased intellectual capital to missions and minimizing the time the ship spends waiting near a potential target for a response from shore, telepresence can increase efficiency as well as the pace and potential for discovery. This is very similar to the way NASA conducts remote exploration of Mars.

The total scientific and technical support function for the *Okeanos Explorer* supports two critical elements and the specialized contract staff associated with each:

- Advanced satellite technology (hardware and software systems) and remote Exploration Command Center (ECC) support required for virtual access to systematic exploration products by the scientific community via telepresence.
- Service, maintenance, and upgrades required to operate the complex remotely-operated vehicle (ROV) that is hardwired to the ship.

The newly requested funds will support the externally competed contracts for the telepresence operations requirement. The telepresence operations requirement will consist of telepresence system consumables, data storage, VSAT bandwidth services, terrestrial network services, hardware warranties, hardware maintenance, spares and upgrades, and software licenses.

Resource requirements are as follows:

- Telepresence capability: \$1 million
 - The land network equipment and services will require \$200,000.
 - The broadband satellite feed and services will require \$800,000.
- Additional days-at-sea: \$0.5 million

Statement of Need and Economic Benefits:

NOAA has acquired and outfitted a former Navy ship, the *Okeanos Explorer*, to explore, systematically collect data, and gather foundational information to support subsequent efforts in more in-depth exploration, focused research, and natural resource management. No other Federal agency has the ability to systematically explore the oceans in the manner that NOAA can using its dedicated vessel, unique technologies, and experienced personnel. Systematic exploration products will complement the growing Integrated Ecosystem Approach (IEA) initiative, improve understanding of existing data and information, and identify research gaps.

Previous funding specifically associated with the *Okeanos Explorer* has been allocated to the ship conversion process and the standard OMAO costs for operations and maintenance for T-AGOS class vessels. In concert with base resources, the new funds will develop, operate, and maintain the ROV, the deep-water multi-beam system, the telepresence system, and the ship's scientific sampling equipment. In addition, NOAA will operate and maintain the shore-based ECCs that currently exist in NOAA facilities in Silver Spring, MD; the Pacific Marine Environmental Lab (PMEL) in Seattle, WA; the Joint Hydrographic Center at the University of New Hampshire; the Institute for Exploration in Mystic, CT; and the Inner Space Center at the University of Rhode Island. The new approach to scientific discovery enabled by telepresence removes traditional shipboard constraints and supports broad access and increased participation from scientists and experts.

Base Resource Assessment:

All previous funding specifically associated with the *Okeanos Explorer* has been allocated to the ship conversion process and the standard OMAO costs for operations and maintenance for T-AGOS class vessels.

Schedule and Milestones:

- The *Okeanos Explorer* was commissioned August 19, 2008, and is currently completing a series of testing and acceptance of ROV systems, shakedown cruises, and shipboard trials.
- In FY 2009, the ship conducted mapping field trials.
- In FY 2009, a stakeholder and NOAA Program workshop identified regional targets for the *Okeanos Explorer's* FY 2010 and FY 2011 Pacific Ocean basin exploration.

- In FY 2010, the ship successfully completed a major joint expedition in partnership with Indonesia to explore deepwater areas of the Coral Triangle, collecting information on new submerged active volcanoes, new habitats, and new species.
- In FY 2011, a stakeholder and NOAA Program workshop will identify regional targets for the Okeanos Explorer's FY 2012 and FY 2013 Atlantic Ocean basin exploration.
- In FY 2012, the *Okeanos Explorer* will be home-ported in Narragansett Bay, RI (October 2011).
- In FY 2012 and FY 2013, the NOAA program will conduct the excursions identified in the FY 2011 stakeholder workshop. A white paper describing the process and methodology used to identify and assign targets for exploration is available upon request.

Deliverables:

- Operational telepresence capability
- Increased reach and scope of telepresence activities by virtue of additional days at sea

Performance Goals and Measurement Data

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Cumulative number of scientists virtually engaged in multidisciplinary discoveries via telepresence through ECC's	Target	Target	Target	Target	Target	Target
With Increase	0	55	110	165	220	275
Without Increase	0	0	0	0	0	0
Description: Engagement of scientists via telepresence brings to the ship a wealth of expertise virtually from a widely diverse group of academics, allowing real-time observations, assessments of potential discoveries, gathering of samples, and other foundational data critical for the development of future, targeted research. This is only possible with the combination of the requested funds and the redirection of OER base funds.						

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Cumulative number of outreach & education links to classrooms, educators & stakeholders in real time through broadband internet	Target	Target	Target	Target	Target	Target
With Increase	0	110	220	330	440	550
Without Increase	0	0	0	0	0	0
Description: As is well documented, textual teaching coupled with graphical demonstrations have a larger impact on the retention of information in young minds. Adding real-time delivery of information engages students more fully and embeds them into the scientific process in ways not otherwise achievable by traditional teaching methods.						

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Cumulative number of scientists physically on board facilitating discoveries in selected science fields	Target	Target	Target	Target	Target	Target
With Increase	20	40	60	80	100	120
Without Increase	20	40	60	80	100	120

Description: The *Okeanos Explorer* has a berthing capacity for 2-4 science crew-members, thus limiting on-board scientific expertise to the 2-4 specialties of the science crew members plus whatever expertise can be obtained through traditional satellite-phone hook-ups and e-mail conversations – which can be time consuming and wasteful of valuable at-sea resources. This performance goal can be met without telepresence.

PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Dollar amounts in thousands)

Activity: Oceanic & Atmospheric Research
 Subactivity: Ocean, Coastal, & Great Lakes Research

Object Class		2012 Increase
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	0
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	500
24	Printing and reproduction	0
25.1	Advisory and assistance services	0
25.2	Other services	200
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	800
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	0
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	1,500

Integrated Ocean Acidification (Base Funding: 0 FTE and \$5,500,000; Program Change: +3 FTE and +\$6,100,000): NOAA requests an increase of \$6,100,000 and 3 FTE for a total of \$11,600,000 and 3 FTE to complement, accelerate, and enhance current NOAA Ocean Acidification (OA) activities and provide comprehensive research, dedicated monitoring, and enhanced forecasting capabilities leading to adaptive strategies toward the improved management of living marine resources impacted by OA.

Proposed Actions:

Our present understanding of the processes associated with OA and its impacts on large marine ecosystems is not sufficient to derive adaptive management strategies, especially those targeting the management of living marine resources – a mainstay of the economy. This coordinated effort will enable OAR, NMFS, and NOS to build on the current OA funding. This increase will support new technologies and ecosystem monitoring systems, better models, and dedicated research programs as prescribed in the draft NOAA OA Implementation Plan: (1) OA Monitoring, (2) Ecosystem Impacts of OA, (3) Biogeochemistry & Ecosystem Models, (4) Human Dimensions, (5) Data Synthesis & Information Products, and (6) Engagement.

1. Research on Physiological and Ecosystem-level Responses and Development of Ecosystem/ Socioeconomic Models (\$2,500,000) –Assess physiological and ecosystem-level effects of OA on commercial and recreational marine fish stocks and key species critical to NOAA-managed resources to define critical thresholds and adaptive strategies through in-house and competitive research grants. Incorporate these impacts into both existing and newly developed models to predict ecological, trophic level and socioeconomic response in regions where those OA-impacted species reside. (Themes 2, 3 & 4)
2. Develop advanced OA technologies and sensors (\$1,100,000) - Provide advanced carbonate chemistry technologies including sensors deployable on a range of platforms that are cost efficient, operate autonomously over extended periods of time, and provide NOAA with the tools and technological capability to continuously monitor OA across a diverse set of marine environments. (Theme 1 & 2)
3. Ecosystem OA Monitoring Network (\$1,300,000) – Create a Coral Reef OA Observing Network designed to monitor ecosystem response to and feedback from OA to better resolve critical thresholds. The network would comprise discrete biological and chemical observations with advanced observing systems providing real-time information products from selected reef environments. Achieving full capability will require development of advanced ocean acidification technologies (i.e., advanced sensors– funded in #2 above). Biological and biogeochemical surveys and reef process studies are also necessary components of this ecosystem observing network. (Theme 1)
4. Build Carbonate Analytical Capabilities (\$1,200,000) – Leveraging existing marine research facilities to serve as dedicated research foci and support standardized sample analyses will be a significant step towards delivering uniformly calibrated data and products. These dedicated facilities will also serve as training and technology transfer agents for other laboratories expanding their analytical capacity. (Themes 1 & 2)

Statement of Need and Economic Benefits:

Increased atmospheric carbon dioxide concentrations result in increased carbon levels in our oceans, causing changes in seawater chemistry that have been labeled ocean acidification. OA generates a unique suite of environmental changes that increasingly affect ocean ecosystems, fisheries, and other marine resources in such profound ways as reducing the ability of many organisms to build their shells and impacting both the carbon and nitrogen cycles that help sustain life on Earth. The economic consequences of these ecosystem-scale impacts of OA could reverberate through the

U.S. and the global economy. The U.S. is the world's third largest seafood consumer with total consumer spending for fish and shellfish of approximately \$60 billion per year. Coastal and marine commercial fishing generates upwards of \$30 billion per year. The shellfish industry throughout the U.S. accounts for approximately half of this amount. In addition to the impact on fisheries, ocean acidification also has potentially devastating implications for coral reef ecosystems which provide coastal communities protection from storms and economic benefit through tourism.

Two legislative acts mandate action by NOAA: (1) The Federal Ocean Acidification Research and Monitoring (FOARAM) Act of 2009 requires NOAA to develop and implement a comprehensive monitoring and research plan for effectively characterizing the consequences of ocean acidification. (2) The Magnuson-Stevens Reauthorization Act requires that conservation and management measures shall account and allow for variations among fisheries, fishery resources, and catches caused by climate-scale processes, such as ocean acidification. Such requirements build upon existing NOAA capabilities and responsibilities, including long-term oceanographic monitoring, model development, and threshold assessments. This OA initiative enhances existing capabilities to help meet NOAA's increased responsibilities.

Base Resource Assessment:

In FY 2010, base resources were allocated to NOAA OAR Climate Program Office (\$4.0 million) and NOAA NMFS Science & Technology Office (\$1.5 million) to support OA activities. In FY 2012, these two base funds will be transferred and managed through a single OAR account to form the NOAA Ocean Acidification Program Office (\$5.5 million).

Schedule and Milestones:

	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Research & Technology Dev						
ID new/existing platforms for OA instrument deployment (OAR-PMEL, AOML)						
Develop advanced OA technologies and sensors (OAR-OER)						
Competitive physiological and ecosystem-level research on OA impacts (NOS - NCCOS)						
Physiological research on targeted species (NMFS-AKC, NWC, NEC)						
Monitoring & Modeling						
Coral reef OA observing network suite emplacement and maintenance (OAR-AOML, PMEL/ NOS-CRCP/NMFS-PIFSC)						
Forecasting & Management Applications						
OA forecast on marine food web & managed resources (NMFS-AKC)						

Competitive regional ecosystem modeling (NOS-NCCOS)						
OA socioeconomic impacts – forecasts (OAR-Sea Grant)						
Outreach & Product Delivery	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Regional OA assessments (NOS-NCCOS)						
Coordinate national outreach activities (OAR- Sea Grant)						
Develop and implement climate change management tools (OAR-CPO/NOS-CRCP)						
Climate vulnerability assessments and capacity-building workshops (OAR-CPO/NOS-CRCP)						

Deliverables:

- FY 2012-2014: Advanced OA monitoring technologies developed; Atlantic coral reef OA observing test-bed established
- FY 2011: National Plan on ocean acidification with regional research priorities delivered to NOAA
- FY 2013: First regional climate vulnerability assessment report delivered to NOAA management
- FY 2013: Species-specific OA impacts research results available for model development and regional management response
- FY 2014-2016: Ecosystem-level OA impacts research results available for regional management response
- FY 2013-2016: Models developed to predict impacts on marine food webs and managed resources
- FY 2015-16: Models developed to predict and manage socio-economic impacts at regional scales

Performance Goals and Measurement Data

Performance Goal (Long term):	FY	FY	FY	FY	FY	FY
Improve confidence of the impacts of ocean acidification for each large marine ecosystem studied (IPCC reports* % Low - High ratings)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Increase	5%	10%	20%	40%	60%	75%
Without Increase	2%	4%	5%	5%	5%	6%

Description: The uncertainty is a designated level of understanding assessed by a panel of NOAA investigators with regards to the anticipated impacts of ocean acidification on each of the ten Large Marine Ecosystems (LME) based upon the IPCC criteria (including likelihood and confidence). This designation is evaluated on an annual basis and expresses an aggregate of the uncertainties associated with each of the critical LME's facets posited to be impacted by ocean acidification.

Performance Goal (Long term):	FY	FY	FY	FY	FY	FY
Number of sites with mean annual ocean acidification index (Aragonite Saturation State) determined to be within 0.2 units	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Increase	10	15	20	25	30	35
Without Increase	2	3	4	5	5	6

Description: Represents an annual inventory of in situ-based fixed and underway observing platforms dedicated to monitoring the rate, magnitude, and dynamics of ocean acidification in response to increasing atmospheric carbon dioxide. These ocean acidification observing platforms are defined by their inherent ability to fully constrain the carbonic acid system and must be capable of resolving decadal changes in ocean chemistry in response to ocean acidification

* From the IPCC Third Assessment Report: "An explicit uncertainty range is a likely range. Estimates of confidence are: very high (95 %); high (67-94 %); medium (33-66 %); low (5-32 %); very low (< 5 %).

PROGRAM CHANGE PERSONNEL DETAIL

Activity: Office of Oceanic & Atmospheric Research

Subactivity: Ocean, Coastal, & Great Lakes Research

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Program Director	Silver Spring, MD	ZP-V	1	123,758	123,758
Program Deputy Director	Silver Spring, MD	ZP-IV	1	89,033	89,033
Field/Lab Technician	Miami, FL	ZT-III	1	50,204	50,204
Field/Lab Technician	Seattle, WA	ZT-III	1	50,628	50,628
Total			<u>4</u>		<u>313,623</u>
less Lapse		25%	<u>1</u>		<u>78,406</u>
Total full-time permanent (FTE)			3		235,217
2011 Pay Adjustment (0%)					0
2012 Pay Adjustment (0%)					0
TOTAL					<u>235,217</u>

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	3
Other than full-time permanent	0
Total	<u>3</u>
Authorized Positions:	
Full-time permanent	4
Other than full-time permanent	0
Total	<u>4</u>

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Office of Oceanic & Atmospheric Research
Subactivity: Ocean, Coastal, & Great Lakes Research

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$235
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	235
12 Civilian personnel benefits	71
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	500
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	2,700
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	294
31 Equipment	800
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	1,500
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	6,100

National Sea Grant College Program Base: Helping Coastal Communities Prepare for and Respond to Natural Hazards and Extreme Events (Base Funding: 0 FTE and \$1,115,000;

Program Change: +0 FTE and +\$885,000): NOAA requests an increase of 0 FTE and \$885,000 for a total program of 0 FTE and \$2,000,000. In the Consolidated Appropriations Act, 2010, Congress provided an additional \$1,115,000 above the FY 2010 President's Request. With these additional resources NOAA initiated this program. This increase will expand the level of support for regional research, training, and technology transfer to enhance the resiliency of coastal communities to persistent natural hazards such as climate-induced sea-level rise and to extreme events such as coastal storms. The requested funds will enable NOAA to engage an additional three coastal communities beyond the current two communities per year.

Proposed Actions:

NOAA Sea Grant research and stakeholders' engagement will be driven by the priorities established in NOAA and interagency planning efforts. This includes: the Ocean Research Priorities Plan (ORPP), the National Sea Grant College Program 2009-2013 Strategic Plan, NOAA's Five-Year Research Plan, and the Regional Research and Information planning effort that is being facilitated by NOAA Sea Grant as an approach to down-scaling the national ORPP.

In FY 2012, NOAA Sea Grant will focus on a regional approach to Theme #2 "Increase Resiliency to Natural Hazards" and the near term priority of "Forecasting the Response of Coastal Ecosystems to Persistent Forcing and Extreme Events," two areas highlighted in the ORPP. NOAA Sea Grant will conduct the research needed to assess hazard-related risks and increase the availability and usefulness of hazard-related information and forecasting for citizens, industries, and decision-makers in coastal communities. NOAA Sea Grant will:

- Conduct risk assessment research in the context of hurricanes, other coastal storms, and climate-related changes;
- Assist public and private decision-makers in creating and adopting policies, plans, and ordinances to reduce risks, manage catastrophic events, and speed recovery;
- Conduct research and communicate information on how the use of natural features and new technologies can help communities prepare for and mitigate the impacts of hazardous events and climate change;
- Make Sea Grant's local knowledge and contacts available to work with Federal, state, regional, and local agencies, non-governmental organizations, and international partners that have hazardous event responsibilities, to facilitate the speed and quality of response to these crises;
- Identify viable strategies and formulate plans to prepare for, mitigate and adapt to climate expected impacts; and
- Consolidate best research-based practices in risk analysis, assessment, mitigation, adaptation and communications, and disseminate risk information to citizens, industries and decision makers in coastal communities.

NOAA Sea Grant will bring together the regional institutional infrastructure represented by the network of state Sea Grant programs to create a powerful regional science and outreach capability. Sea Grant will use a competitive RFP process to fund large-scale regional studies, ensuring that scarce NOAA resources will be targeted at the most tractable approaches, using a process that will be integrated from the start, will be mutually dependent, and will involve management and stakeholder participation.

Statement of Need and Economic Benefits:

Sea level rise, the increased number and intensity of coastal storms, the ongoing threat of oil spills, and other natural and human hazards are putting more people and property at risk along the nation's coasts, with major implications for human safety and the economic and environmental health of coastal areas. It is essential that residents of coastal communities understand these risks, adapt and learn what they can do to reduce their vulnerability and respond quickly and effectively when events occur. This issue would benefit from a regional approach involving all coastal programs including NOAA's Coastal Services Center (CSC) and the Ocean and Coastal Resource Management Program (OCRM). NOAA Sea Grant will use its integrated research, training, and technical assistance capabilities, and its presence in coastal communities, in collaboration with CSC and OCRM, to play a major role in helping local citizens, decision-makers, and industries plan for hazardous events and optimize the ability of their communities to respond and rebuild.

Base Resource Assessment:

In the Consolidated Appropriations Act, 2010, Congress provided an additional \$1,115,000 above the FY 2010 President's Request. With these additional resources, NOAA initiated this program consistent with the authorities provided to Sea Grant to bring the results of environmental research to decision makers for the purpose of economic improvement & enhanced safety of coastal communities.

Schedule and Milestones:

- Regional competitions based on ORPP themes to address regional issues (FY 2012- FY 2016).
- Regional workshops to develop science plans and disseminate research results/products (FY 2012-FY 2016).
- Incorporate research information, tools, and forecasts into regional management plans and IEAs (FY 2016).
- Transfer prototype ecological and predictive forecasts to NOAA laboratories for transition to operations (FY 2016).

Deliverables:

Through the funding of integrated regional research efforts, the proposed increase will allow NOAA to:

1. Ensure that coastal residents are aware of and understand the physical processes that produce hazards and climate change and the implications of those events for their communities.
2. Ensure that coastal communities address social and environmental barriers to improve the community's ability to mitigate and respond to natural hazards.
3. Ensure that coastal communities are able to effectively respond to coastal catastrophes.
4. Develop technologies and tools required to increase understanding of ocean, coastal, and Great Lakes ecosystems, facilitate the ecosystem approach to management, and promote responsible and sustainable use of ocean, coastal, and Great Lakes resources;
5. Ensure coastal communities have access to and the ability to utilize data and innovative and adaptive tools and techniques to minimize hazard risks (i.e. planning and construction BMPs, standards, resiliency index, retrofits, flood-zone maps and freeboard).
6. Strengthen stewardship through outreach and education to enhance informed decision making by coastal communities, stakeholders, and users of ocean, coastal and Great Lakes resources, as well as to facilitate the application of new research, technologies, and tools.

Performance Goals and Measurement Data

Performance Goal:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Number of coastal communities that have been trained or been provided with hazard resiliency and mitigation tools, techniques, or best practices.						
With Increase	2	5	10	15	20	25
Without Increase	2	4	6	8	10	12
Description: Coastal communities and decision-makers benefit from improved availability and usefulness of hazard-related information and forecasting for citizens, industries, and decision-makers in coastal communities and understand the benefits of coastal hazard risk planning.						

Performance Goal:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Performance Measure: Percentage of U.S. coastal states and territories demonstrating 20% or more annual improvement in resilience capacity to weather and climate hazards (%/yr)* Measure 18e						
With Increase	30%	36%	41%	47%	53%	59%
Without Increase	30%	33%	36%	39%	42%	45%
Description: Measure 18e						

Performance Goal:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Number of regionally-focused climate impacts and adaptation studies, tools, and capacity-building utilized by coastal and emergency management						
With Increase	1	3	5	7	8	10
Without Increase	1	2	3	4	5	6
Description: This measure tracks the number of regionally-focused climate impacts and adaptation studies, tools, and capacity-building utilized by coastal and emergency management. The use of these products will improve management responses to climate change.						

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Office of Oceanic & Atmospheric Research
Subactivity: Ocean, Coastal, and Great Lakes Research

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	885
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	885

Ocean Exploration & Research (Base Funding: 17 FTE and \$30,923,000; Program Change: -0 FTE and -\$2,900,000):

NOAA requests a decrease of \$2,900,000 and 0 FTE for a total of \$28,023,000 and 17 FTE. In the Consolidated Appropriations Act, 2010, Congress provided an additional \$2,900,000 to support further ongoing operations in the Pacific and to advance exploration in the Indian Ocean. In FY 2010, NOAA conducted exploration missions in new areas of active hydrothermal venting associated with unique chemosynthetic habitats, though due to piracy concerns affecting the Indian Ocean, the missions were completed in the Black Sea and eastern Mediterranean. These specific missions have been concluded; therefore, no additional funds are needed. In FY 2012, the requested resources will be used to support OER's unique mission as the Federal government's only program dedicated to exploring unknown and poorly known ocean areas and phenomena. For example, these resources will support BOEMRE-NOAA Partnership Joint expeditions to explore and characterize habitats and ecosystems in deep water areas.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Office of Oceanic & Atmospheric Research
Subactivity: Ocean, Coastal, & Great Lakes Research

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	-2,900
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	-2,900

Aquatic Invasive Species Program: Sea Grant Aquatic Invasive Species (Base Funding: 3 FTE and \$2,003,000; Program Change: 0 FTE and -\$1,001,000): NOAA requests a decrease of 0 FTE and \$1,001,000, for a total remaining program of 3 FTE and \$1,002,000 for the Sea Grant Aquatic Invasive Species Program. In the Consolidated Appropriations Act, 2010, Congress provided additional funds for invasive species research, education, and outreach activities to create tools to help states, communities, fishery commissions, industries and individuals prevent and control invasive species. With these additional funds, NOAA Sea Grant Aquatic Invasive Species Program (AISP) began additional multiyear efforts to study and interdict invasion pathways. These include live bait species that often originate far from where anglers use them, biological supply houses and their academic and other customers, and continuation of successful programs working with recreational boaters to ensure that invasive species are not carried between water bodies on boats. In FY2012, the program will continue at the \$1M level, supporting projects that address serious invasive species issues identified in state, regional or national plans.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Office of Oceanic & Atmospheric Research
Subactivity: Ocean, Coastal, & Great Lakes Research

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	-1,001
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	-1,001

Marine Aquaculture Program: Sea Grant National Marine Aquaculture Initiative (Base Funding: 1 FTE and \$4,801,000; Program Change: 0 FTE and -\$478,000): NOAA requests a decrease of 0 FTE and \$478,000 for a total program of 0 FTE and \$4,323,000. This national strategic investment will implement a two-pronged approach to address marine aquaculture: competitive extramural research and transfer of research, tools, and technology by Sea Grant Extension. These efforts will complement, accelerate, and enhance current aquaculture activities in the National Marine Fisheries Service (NMFS) and address research gaps identified in the 2008 Governmental Accountability Office (GAO) report “Offshore Marine Aquaculture: Multiple Administrative and Environmental Issues Need to be Addressed in Establishing a U.S. Regulatory Framework” (GAO-08-594, May 9, 2008), with the goal of developing adaptive strategies that improve NOAA’s ability to manage fisheries, end overfishing, and ensure the viability of the multibillion-dollar U.S. seafood industry. Together with the NMFS Aquaculture Program Office, NOAA will address all four aquaculture research areas identified in the 2008 GAO report.

Proposed Actions:

By combining competitive research and research delivery via Sea Grant Extension, OAR proposes to address three of the four research needs identified in the 2008 GAO report: 1) best management practices to minimize environmental impacts, 2) data on how escaped aquaculture fish might impact wild fisheries, and 3) strategies to breed and raise fish while effectively managing disease. Alternative fish feeds, the fourth research need, will be addressed by a complementary increase in NMFS.

The proposed funding level will advance sustainable, domestic aquaculture through a competitive research initiative that addresses high priority issues for aquaculture combined with an enhanced aquaculture extension effort for research and technology transfer directly to stakeholders. This Land Grant/Sea Grant research-extension model is based on local extension agents delivering current research findings and technology directly to coastal constituents and serving as conduits to identify knowledge and research gaps to “ground truth” future research priorities. Our present understanding of, and solutions for issues associated with implementing marine aquaculture is limited, hindering our ability to manage living marine resources. Within the proposed funding level, NOAA will sustain capacity to address issues identified by the GAO: program administration; permitting and site selection; environmental management; and research. This FY 2012 coordinated effort will enable the NOAA Aquaculture Program, a matrix program containing offices in OAR, NMFS, NOS, and NESS, to advance sustainable, domestic aquaculture.

Within the funds requested, NOAA will address the following:

1. Research to Support Sustainable Aquaculture (\$2,727,000) – NOAA, through Sea Grant, will leverage its current permanent base of competitive research funding (\$1,627,000) for marine aquaculture with \$1,100,000 from the additional funds provided by Congress in FY 2010 to focus the extramural research community on research gaps addressed in the 2008 GAO report: (1) research on technical aspects of innovative mitigation or “smart design” approaches to sustainable aquaculture, such as integrated multi-trophic aquaculture or other ways to design aquaculture production in an ecosystem management context, which will address impacts of escaped fish and hatchery management issues associated with disease; (2) development of planning tools or approaches to aid site selection for new or expanded aquaculture facilities in the context of coastal and marine spatial planning, including planning and zoning tools for coastal managers, which will aid permitting and site selection; (3) research on the social and economic issues associated with current and new marine aquaculture, which aids the development of best management practices. Research to

develop alternative fish feeds would be addressed by a complementary effort in the NOAA Fisheries Aquaculture Program Office and Science Centers.

2. Aquaculture Extension Enhancement (\$1,600,000) – NOAA, through Sea Grant, will sustain its enhancement of Aquaculture Extension made possible with the additional aquaculture funding provided to Sea Grant in FY 2010 and continued in the FY 2011 Annualized CR. The current emphasis on regional needs for outreach will allow NOAA to deliver research findings directly to coastal constituents. This effort, driven by extension agents who live and work in coastal communities, will provide tangible outcomes after 3 years that clearly lead to impacts within 5 years. Extension activities (including 12 new hires and targeted extension projects) will include: demonstration of increased production and jobs in innovative sustainable aquaculture, especially in coastal communities; alternative or supplemental employment opportunities for fishermen in aquaculture; new or revised aquaculture policy and streamlined permitting; improved management; increased product quality and acceptance; and cooperative training at aquaculture facilities. The Sea Grant model has proven effective in the transfer of technology and information to coastal constituents.
3. Finally, NOAA proposes to terminate \$478,000 of the additional funding that had been provided by Congress in FY 2010. These funds served the useful purpose of funding competitively selected, multi-year projects and regional efforts to develop sustainable marine aquaculture that address critical issues identified in state, regional or national plans. In addition, partnerships with non-federal entities were developed (e.g., industry partners, non-federal matching funds). However, these additional funds are no longer needed because the highest priority projects can continue to be supported within the current funding level.

Statement of Need and Economic Benefits:

Many fishing communities are facing severe economic hardships as declining fish stocks and the need to end overfishing have necessitated reduced fish harvests levels. New approaches are therefore required to end overfishing and supply safe and sustainable seafood while maintaining economically vibrant coastal communities. Benefits include: (1) providing working waterfront alternatives for fishing communities; (2) increasing and stabilizing flow of seafood product to markets; (3) stabilizing incomes and jobs; and (4) promoting locally grown, sustainable seafood.

Fishing and aquaculture in the U.S. have not met increased demand for seafood for a variety of reasons, including limits to domestic wild catch and regulatory uncertainties facing the U.S. aquaculture industry. As a result, over 80 percent of our seafood supply is imported, with half of that coming from foreign aquaculture, and tens of thousands of potential jobs have been outsourced overseas. An expanded U.S. aquaculture industry has the potential to supply safe, local seafood grown in the U.S., create jobs in coastal communities, help support fishing communities, and complement existing fishing activities while ending overfishing. This initiative would also help to implement the Magnuson-Stevens Fishery Management Conservation Act (MSA): “Conservation and management measures shall...take into account the importance of fishery resources to fishing communities...and...to the extent practicable, minimize adverse economic impacts on such communities.” One barrier to proper management of fishery resources is a lack of trust and direct information transfer between management agencies and coastal constituents (including citizens, community leaders, and industries). Constituents need more training, information and technical assistance to remain competitive and respond to new fisheries and aquaculture management challenges. The training and neutral facilitation provided by Sea Grant extension agents will help build trust with fishing and aquaculture communities, improving NOAA's ability to manage fisheries, end overfishing, and ensure the viability of the multibillion-dollar U.S. seafood industry.

The 2008 GAO report found that it is important for a regulatory framework to include federally funded research to address gaps in current knowledge on a variety of issues related to offshore aquaculture. Stakeholders identified four research areas as particularly appropriate for Federal funding: the development of alternative fish feeds; the development of best management practices; the investigation of how escaped aquaculture-raised fish might impact wild fish populations; and the development of hatchery technologies to breed and grow fish, while effectively managing disease. This effort would address these issues and transfer research findings to coastal constituents who demand this information.

Base Resource Assessment:

The base resources for NOAA’s Marine Aquaculture Program is \$4,801,000, the level provided in the Consolidated Appropriations Act, 2010, and are described in the National Sea Grant College Program, Marine Aquaculture Program base narrative.

Schedule and Milestones:

Aquaculture Research & Infrastructure	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Initiate new extension personnel and projects.	X	X				
Select competitive aquaculture research projects.	X	X	X	X	X	X
Outreach & Product Delivery	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Extension outreach to coastal communities.	X	X	X	X	X	X

Deliverables:

- Site specific commercial, pilot, or technology transfer projects to establish technical and economic feasibility of innovative mitigation or “smart design” approaches to aquaculture, such as integrated multi-trophic aquaculture or other ways to design aquaculture production in an ecosystem management context.
- Assemble/reaffirm regional advisory group to tackle hurdles and opportunities for aquaculture (e.g., strategic planning, identifying stakeholders).
- Develop/update state and regional plan development (including permitting, policy). Aquaculture plans vary across the country. Extension agents working with the National Sea Grant Law Center and Sea Grant legal programs can determine the status of each state in developing/revising aquaculture plans that cover permitting, disease control, interstate transfer of shellfish, and regional best management practices.
- Bring new aquaculture products/species online, develop innovative marketing approaches, and catalyze new business opportunities (e.g., ecosystem service markets).
- Incorporate aquaculture into Coastal & Marine Spatial Planning efforts.

Performance Goals and Measurement Data

Performance Goal:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Number of coastal communities that have adopted/implement sustainable - economic and environmental - aquaculture development practices and policies as a result of Sea Grant	Target	Target	Target	Target	Target	Target

activities (Cumulative)

With Decrease	4	6	8	10	12	14
Without Decrease	4	6	9	11	14	16

Description: This provides technology and information transfer to coastal constituents (including citizens, community leaders, and industries). Armed with this information, coastal constituents can adopt sustainable aquaculture that will contribute to healthy coastal communities, while balancing among multiple social, economic, and environmental uses. New practices and policies will be based on reports from coastal community leaders and aquaculture operations and verified by local Sea Grant extension personnel.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Office of Oceanic & Atmospheric Research
Subactivity: Ocean, Coastal, and Great Lakes Research

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	-478
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	-478

APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH, AND FACILITIES

SUBACTIVITY: INFORMATION TECHNOLOGY RESEARCH & DEVELOPMENT

The objective of the Information Technology R&D subactivity is to accelerate the adoption of advanced computing, communications, and information technology throughout NOAA. Information Technology R&D supports OAR's High Performance Computing and Communications (HPCC) Initiative. The HPCC program supports OAR through major improvements in weather and climate forecasting, ecosystem and ocean modeling, and environmental information dissemination. These improvements are heavily dependent on major advances in high-end computing power, advanced information technology, and the availability of environmental data and information. These critical investments allow NOAA to meet its mission to deliver vital services and science education.

Through this program, NOAA participates as a mission agency in the National Coordination Office for Networking and Information Technology Research and Development (NITRD). NOAA participates on several of the NITRD interagency coordinating groups including High End Computing, Large Scale Networking, Human Computer Interaction, and Software Design and Productivity.

HIGH PERFORMANCE COMPUTING INITIATIVES

High Performance Computing and Communications (HPCC) supports a number of objectives in NOAA's Strategic Plan through support of IT research targeted at improving NOAA's mission and services which expands the global understanding of environmental science. The purpose of the HPCC program is to make major improvements in the Nation's ability to forecast the weather and climate, and to disseminate environmental information. At the same time, the program is aimed at stimulating the modernization of NOAA's computationally intensive services through the use of evolving high performance computing and high-speed networking technologies. Improvements in the accuracy and timeliness of NOAA's short-term weather warnings, seasonal forecasts, hurricane forecast improvements, as well as regional and global climate predictions are heavily dependent on major advances. These advances would include high-end computing power, advanced information technology, and the widespread availability of environmental data and information. Timely and responsive dissemination of NOAA's services and information requires full use of modern network and communication technologies. This program provides NOAA's focus for coordinating with external organizations and programs impacting the HPCC Program, through NITRD and its Interagency Coordinating Groups on Information Technology Research and Development (IT R&D), and by establishing agreements with other federal agencies to obtain additional computational cycles to support NOAA's environmental research activities.

The HPCC program provides NOAA with necessary computational and network resources required to support continued advances in environmental modeling capabilities. Benefits of the HPCC program include:

- Improvements in short term warning and weather forecast systems and models,
- Enabling scientists to attack long-lead time problems associated with the physical processes that govern the behavior of the atmosphere and ocean,
- Maintaining NOAA's leadership position in understanding climate with applications towards critical issues such as hurricanes, drought, sea-level rise, and ice-free arctic, and
- Accelerating modeling and simulation activities and providing relevant decision support information on a timely basis for programs such as the multi-agency Climate Change Science Program.

Schedule & Milestones:

FY 2012

- Award funding to approximately 15-20 HPC and advanced networking R&D projects,
- Implementation of Flow-Following Finite-Volume I cosahedral Model (FIM) global model and updates for operations,
- Develop and utilize the Scalable Modeling System to parallelize, debug and support NOAA Earth System Models on NOAA HPC systems in research and operations (FY 2012 – FY 2016), and
- Develop modeling framework for hydro-climate to provide global seasonal drought forecasts at regional resolution and decadal projections of drought regimes.

FY 2013

- Award funding to approximately 15-20 HPC and advanced networking R&D projects, and
- Implementation of FIM global model and updates for operations.

FY 2014

- Award funding to approximately 15-20 HPC and advanced networking R&D projects,
- Exercise next 4 year option of the R&D HPC support contract,
- Implementation of FIM global model and updates for operations,
- Develop 1 km non-hydrostatic Atmospheric General Circulation Model (AGCM),
- Develop 1/50° Ocean General Circulation Model (OGCM), and
- Develop high resolution climate/carbon/ice model for Polar Regions for decadal prediction capability for Arctic, assessment of potential for Arctic feedbacks to accelerate global warming, and more accurate estimates of sea level rise rates.

FY 2015

- Award funding to approximately 15-20 HPC and advanced networking R&D projects, and
- Implementation of FIM global model and updates for operations.

FY 2016

- Award funding to approximately 15-20 HPC and advanced networking R&D projects, and
- Implementation of FIM global model and updates for operations.

Deliverables/Outputs:

- HPC System availability – Maximum number of computational hours made available to scientists.

Performance Goals and Measurement Data

Performance Measure:	FY	FY	FY	FY	FY	FY
HPCC / R&D System Availability	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
	97%	97%	97%	97%	97%	97%
Description: On a contractual basis, availability is measured over a six month rolling window. Specifically, the system is contractually required to perform scheduled work 97 percent of the time over a six month period. The system is comprised of several components, including computers, disk storage, tape archive, interconnections, and software.						

PROGRAM CHANGES FOR FY 2012:

Information Technology Research & Development (Base Funding: 13 FTE and \$13,213,000; Program Change: +0 FTE and +\$53,000): NOAA requests an increase of \$53,000 and 0 FTE for a total of \$13,266,000 and 13 FTE to support existing program requirements within this subactivity but not provided for in the FY 2010 Consolidated Appropriations Act. Specifically, these funds will be used for the HPCC program which supports OAR and other NOAA modelers through computational and network resources required to support continued advances in environmental modeling capabilities. These funds will make it easier to achieve the maximum number of computational hours available to scientists.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Office of Oceanic & Atmospheric Research
Subactivity: Information Technology Research & Development

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	53
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	53

Congressionally Directed Projects (Base Funding: 0 FTE and \$19,500,000; Program Change: -0 FTE and -\$19,500,000): NOAA requests a decrease of \$19,500,000 to terminate the funding level that would continue under an annualized FY 2011 continuing resolution associated with the Congressionally directed projects identified in the Conference Report that accompanied the Consolidated Appropriations Act. 2010. (Note: an additional \$5,095,000 is terminated under the Climate Service section. These funds were appropriated to OAR in FY 2010 but are transferred with the base to the Climate Service as part of the proposed reorganization contained herein.)

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Office of Oceanic & Atmospheric Research
Subactivity: Information Technology Research & Development

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	-19,500
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>-19,500</u>

BUDGET ACTIVITY: CLIMATE SERVICE (Proposed)

For FY 2012 NOAA requests a net decrease of \$3,010,000 and an increase of 27 FTE over the FY 2010 enacted level for a total of \$346,218,000 and 610 FTE for NOAA's Climate Service. This includes \$4,096,000 in inflationary adjustments. The Climate Service is proposed as a new operating unit within NOAA that will operate at the same level of organization as the other NOAA line offices. Existing resources from the Office of Oceanic and Atmospheric Research, the National Weather Service, and National Environmental Satellite Service (proposed name change for National Environmental Satellite, Data, and Information Service) are proposed for consolidation to establish this new operating unit. A full justification for this proposed reorganization is provided in the reorganization section of the budget entitled, "NOAA's Reorganization Proposal for a Climate Service and Other Purposes."

Base Justification for FY 2012:

The base programs and resources presented here for the proposed Climate Service are derived by proposed transfers of selected programs appropriated to other line offices in the Consolidated Appropriations Act, 2010. There are no new programs or activities in the base identified for the Climate Service. The reorganization was carefully designed to be budget neutral.

NOAA's Climate Service Operations, Facilities, and Research base (\$316,899,000 and 583 FTE) includes the following subactivities:

- Climate Research (\$137,497,000 and 252 FTE) includes the ongoing research to better understand the earth system, climate variability, and climate change.
- Integrated Climate Services (\$29,017,000 and 7 FTE) includes the National Integrated Drought Information System (NIDIS), assessment services, and regional climate services.
- Climate Observations and Monitoring (\$141,440,000 and 324 FTE) includes NOAA's ocean observing assets, and data centers.

NOAA's Climate Service Procurement, Acquisition, and Construction base (\$36,425,000 and 0 FTE) includes the following subactivities:

- Climate Research (\$10,379,000 and 0 FTE) includes NOAA's investments in Research High Performance Computing
- Climate Observations and Monitoring (\$26,046,000 and 0 FTE) includes CLASS, Data Center Modernization, and the Regional US Historical Climatology Network.

The Climate Service (CS) is being created through a proposed reorganization of existing resources. NOAA carefully took into consideration the recommendations of the National Academy of Public Administration (NAPA) study for effective and efficient organizational design and implementation of a Climate Service Line Office and worked to ensure the size of the administrative functions necessary to administer the programs and activities of the CS are commensurate with comparable overhead requirements of the other line offices. The proposed reorganization does not increase or decrease the NOAA Full-Time Equivalent (FTE) or billet allocation, and the current facilities will accommodate this reorganization.

The proposed CS will identify, produce, and deliver authoritative and timely information about climate variations, trends, and their impacts on built and natural systems. This information informs and is informed by decision-making, risk management, and resource management concerns for a variety of public and private users acting on regional, national, and international scales. The CS will bring together NOAA's unique set of capabilities and experience in the provision of atmospheric and oceanographic science and services to work with others in meeting the need for climate services on regional to national to global scales. The CS will build upon and continue NOAA's achievements gained over decades of performing world-class, preeminent climate science, and the engagement with interagency, academic, and private sector partners.

NOAA will maintain the continuity and integrity of existing programs that move from the current to the proposed Line Office structure, as evidenced by the continuing activities described in this base budget narrative. The reorganization to create a CS will allow NOAA to integrate its existing climate research, observations, monitoring, modeling, information product development and delivery, and decision support functions to meet the demand for climate information for an informed society capable of anticipating and responding to climate change and its impacts.

The local-to-regional-to-global-scale impacts of climate variability and change have fueled a growing public demand for climate products and services, easily accessible and timely scientific data and information about climate that helps people make informed decisions in their lives, businesses, and communities. NOAA will work collaboratively with decision-makers and partners in the public and private sectors to achieve four interdependent strategic objectives:

- Improved understanding of the changing climate system and its impacts;
- Assessments integrating across current and future states of the climate system that identify potential impacts and inform science, services, and decisions;
- Mitigation and adaptation choices supported by sustained, reliable, and timely climate services; and
- A climate-literate public that understands its vulnerabilities to a changing climate and makes informed decisions.

***** THE FOLLOWING CS STRUCTURE IS NOTIONAL AND CONTINGENT UPON CONGRESSIONAL APPROVAL. *****

The CS operates through a network of CS laboratories, CS programs, and university-based research partnership programs. The CS budget is executed through three core programs: (1) Climate Research Program, (2) Integrated Climate Services, and (3) Observations and Monitoring.

Climate Service Laboratories and Cooperative Institutes

The Climate Research Program provides credible and authoritative science to meet the needs of NOAA and the Nation and to advance the understanding and prediction of climate variability and change. It will also provide essential information for mitigating human influence on climate and for adapting to climate change.

This program pursues a process-level understanding of the changing climate system, to develop a predictive understanding of climate variability and change on time scales of weeks to a century, on geographic scales from global to regional, and applies this knowledge in the development, testing and applications of coupled earth system models. Research includes quantifying, with uncertainty ranges, the roles of natural variability and climate forcing by greenhouse gases, aerosols, clouds, land use, and their interactions, as well as influences of a changing climate on atmospheric constituents and oceanic composition.

The outcome of this capability is to provide a comprehensive understanding and description of the current and future state of the climate system with assessed uncertainties and impacts.

The Climate Research Program capabilities are conducted through four research laboratories, multiple cooperative institutes, and two support programs.

Research Laboratories

Chemical Sciences Laboratory (CSL) in Boulder, CO, provides the chemical-process measurements, analyses, and understanding that are needed to address NOAA's Climate adaptation and mitigation requirements, studying topics such as climate forcing and air quality, to improve NOAA's ability to: (1) predict changes in climate, the stratospheric ozone layer, and air quality and (2) deliver related science information products that address societal and policy needs. More information about CSL is available at: <http://www.esrl.noaa.gov/csd/>

Geophysical Fluid Dynamics Laboratory (GFDL) in Princeton, NJ, conducts the cutting-edge research necessary to understand, project and predict Earth's climate on a range of space and timescales. Research at GFDL addresses many topics through advanced mathematical modeling of the climate and Earth system, including natural climate variability, anthropogenic climate change, weather and hurricane forecasts, El Niño prediction, and stratospheric ozone depletion. The research conducted at GFDL can be developed and transitioned to NOAA operations for the prediction of short-term atmospheric phenomena and into climate understanding and informational products to support policy decision making. More information about GFDL is available at: <http://www.gfdl.noaa.gov/>

Global Monitoring and Research Laboratory (GML) in Boulder, CO, ESRL's Global Monitoring Division conducts sustained observations and research related to global distributions, trends, sources and sinks of atmospheric constituents that are capable of forcing

change in the climate of the Earth. This research will advance climate projections and provide scientific policy-relevant, decision support information to enhance society's ability to plan and respond. GML continuously monitors atmospheric gases, particles, and radiation across the globe to determine trends influencing climate change, ozone depletion, and baseline air quality, and communicates its findings in usable and understandable forms. More information about GML is available at: <http://www.esrl.noaa.gov/gmd/>

Physical Science Laboratory (PSL) in Boulder, CO, addresses physical science questions with short- and long-term societal and policy relevance within NOAA's Climate and Weather and Water Goals. This division conducts the physical process research needed to provide a seamless suite of information and forecast products, ranging from short-term weather forecasts to longer-term climate forecasts and assessments. PSL's scientific goal is to provide the observation, analysis, and diagnosis of weather and climate physical processes necessary to increase understanding of Earth's physical environment, including the atmosphere, ocean, cryosphere, and land, and to enable improved weather and climate predictions on global-to-local scales. More information about PSL is available at: <http://www.esrl.noaa.gov/psd/>

Cooperative Institutes

The CS has competitively awarded cooperative institute partnerships with academic and scientific institutions to foster long-term collaborations dedicated to advancing oceanic and atmospheric research. These cooperative institutes are collocated with one or more NOAA facilities to promote scientific exchange and technology transfer, and provide valuable capabilities and expertise to supplement CS laboratory work.

The primary purpose of each institute is to create a mechanism to bring together the resources of a research-oriented university or institution, the CS, and other branches of NOAA in order to develop and maintain a center of excellence in research. Each Cooperative Institute represents a synergy that has brought together NOAA and premier academic and scientific institutions in a mutually beneficial arrangement to address issues of national and international significance unique to these partnerships. Among the broad range of topics that Cooperative Institutes address are climate processes impacting the Earth's oceans, the Great Lakes, inland waters, Arctic regions, the intermountain West, and the atmosphere. These partners pool resources to produce state-of-the-art interdisciplinary scientific research and outreach. The institutes associated primarily with the CS are:

- **The Cooperative Institute for Climate Applications and Research (CICAR)**, located at the Lamont-Doherty Earth Observatory Campus of Columbia University in Palisades, NY, conducts research on earth system modeling, modern and paleo-climate observations, and climate variability and change applications. CICAR collaborates primarily with the CS Line Office and GFDL.
- **The Cooperative Institute for Climate Science (CICS)**, located at Princeton University's Forrestal Campus in Princeton, NJ, conducts research on earth system modeling development and analysis, earth system modeling applications, and data assimilation. CICS collaborates primarily with the CS Line Office and GFDL.
- **The Cooperative Institute for Research in Environmental Sciences (CIRES)**, at the University of Colorado, in Boulder, CO, conducts research on advanced modeling and observing systems, climate system variability, geodynamics, integrative activities, planetary metabolism, and regional processes. CIRES collaborates primarily with the CS Line Office, CSL, GML, PSL, and NESS.

- **The Cooperative Institute on Marine Ecosystems and Climate (CI-MEC)**, located at Scripps Institution of Oceanography (SIO) at the University of California-San Diego, conducts research on climate and coastal observations, analysis, and prediction, research on biological systems, research in extreme environments, and R&D on observations systems. CI-MEC collaborates primarily with the CS Line Office and Southwest Fisheries Science Center.
- **The Cooperative Institute for the North Atlantic Region (CI-NAR)**, is located at Woods Hole Oceanographic Institution, Woods Hole, MA. CI-NAR conducts research on ecosystem forecasting, ecosystem monitoring, ecosystem management, protection and restoration of resources, and sustained ocean observations and climate research. CI-NAR collaborates primarily with the CS Line Office and North East Fisheries Science Center.
- **The Joint Institute for Marine and Atmospheric Research (JIMAR)**, located at the University of Hawaii in Honolulu, HI, conducts research on tsunamis and other long-period ocean waves, equatorial oceanography, climate, fisheries oceanography, tropical meteorology, and coastal research. JIMAR collaborates primarily with the Global Monitoring and Research Laboratory and National Marine Fisheries Service programs.

More information on the CS's Cooperative Institutes is available at: <http://www.nrc.noaa.gov/ci>

Competitive Research Program The CS Line Office manages the competitive research program in which NOAA funds high-priority climate science to advance understanding of the Earth's climate system and its atmospheric, oceanic, land, and snow and ice components. This science contributes to knowledge about how climate variability and change affect our health, economy, and well-being and supports research that is conducted in regions across the United States, at national and international scales, as well as globally. The competitive research program coordinates climate activities with other line offices (including NESS, NWS, NMFS, and NOS) and works with many external partners. More information about the Competitive Research Program is available at: http://www.climate.noaa.gov/cpo_pa/

Research Super Computing The CS manages a high-performance computing system, which provides a key platform to characterize and quantify climate variations and change through the following leveraged research activities: long-term simulations using better and improved global climate models that include interactive atmospheric chemistry and aerosols; Earth System modeling to determine the fate of the anthropogenic carbon in the land and oceans; research on decadal predictability of the unforced and forced climate system including dependence on initialization and assimilation techniques; and progressively higher resolution atmospheric and oceanic modeling for regional climate change information.

National Data Centers

- **National Climatic Data Center (NCDC)**, found in Asheville, NC, is the world's largest active archive of weather data. NCDC produces numerous climate publications and responds to data requests from all over the world. The Center also operates the World Data Center for Meteorology, and the World Data Center for Paleoclimatology. NCDC supports a three tier national climate services support program – the partners include: NCDC, Regional Climate Centers, and State Climatologists. More information about NCDC is available at: <http://www.ncdc.noaa.gov/oa/about/about.html>
- **National Geophysical Data Center (NGDC)**, located in Boulder, CO, provides long-term scientific data stewardship for the Nation's geophysical data, ensuring quality,

integrity, and accessibility. NGDC's data holdings currently contain more than 400 digital and analog databases, some of which are very large. As technology advances, so does the search for more efficient ways of preserving these data. The Center also works closely with contributors of scientific data to prepare documented, reliable data sets. They welcome cooperative projects with other government agencies, nonprofit organizations, and universities, and encourage data exchange. More information about NGDC is available at: <http://www.ngdc.noaa.gov/ngdcinfo/aboutngdc.html>

- **National Oceanographic Data Center (NODC)**, located in Silver Spring, MD, is an organization that provides scientific and public stewardship for national and international marine environmental and ecosystem data and information. With its regional branch assets and divisions, NODC is integrated to provide access to the world's most comprehensive sources of marine environmental data and information. NODC maintains and updates a national ocean archive with environmental data acquired from domestic and foreign activities and produces products and research from these data which help monitor global environmental changes. More information about NODC is available at: <http://www.nodc.noaa.gov/General/NODC-About/index.html>

Observations and Monitoring Support Programs

NOAA currently maintains most of the nation's sustained climate observing networks. Ocean Observations and Atmospheric Observations are the two main types of in-situ networks providing integrated observations. The information provided by the observation networks are archived and used for research and product development in Environmental Services.

- **Ocean Observations:** The main component of Ocean Observations is the Global Ocean Observing System (GOOS). GOOS is a permanent global system for observations, modeling and analysis of marine and ocean variables to support operational ocean services worldwide. GOOS provides accurate descriptions of the present state of the oceans, including living resources; continuous forecasts of the future conditions of the sea for as far ahead as possible, and the basis for forecasts of climate change.
- **Atmospheric Observations:** NOAA's Atmospheric Observations program manages the resource of global climate in-situ and remotely sensed data and information to promote global environmental stewardship; to describe, monitor, and assess the climate; and to support efforts to predict changes in the Earth environment. Components of the Atmospheric Observation include the NOAA Atmospheric Baseline Observatories and U.S. Climate Reference Network (USCRN) efforts.
- **Environmental Services:** The goal of Environmental Services is to provide increased access and utility to environmental data, information, products, and services through the use of innovative technologies and techniques. The suite of functions include (1) sustain and operate timely/convenient access to the full range of data in the CLASS Operations System, (2) sustain and operate non-CLASS IT infrastructure that supports customer services and data management functions, (3) improve the integrity and fidelity of the historical climate record, and (4) integrate data across observing systems for easier and more timely access by customers.

Proposed Reorganization to Establish a Climate Service Line Office:

The Climate Service is proposed as a new operating unit within NOAA that will operate at the same level of organization as the other NOAA line offices. Existing resources from the Office of Oceanic and Atmospheric Research, the National Weather Service, and National Environmental Satellite Service (proposed name change for National Environmental Satellite, Data, and Information Service) are proposed for consolidation to establish this new operating unit. A full justification for this proposed reorganization is provided in the reorganization section of the budget “NOAA’s Reorganization Proposal for a Climate Service and Other Purposes.”

Research and Development:

The NOAA FY 2012 Budget estimates for its activities, including research and development programs, are the result of an integrated requirements-based strategic planning process. This process provides the structure to link NOAA's strategic vision with programmatic detail and budget development, with the goal of maximizing resources while optimizing capabilities. CS requests \$ 246,599,000 for investments in R&D and infrastructure to support R&D in the FY 2012 Budget.

NOAA's strategic planning process makes specific reference to the objectives and milestones outlined in the NOAA 5-Year Research Plan for 2008-2012. The strict management of planning against these investment criteria, objectives, and milestones leads to NOAA budget proposals that reflect the research and development needs of the organization. The NOAA Research Council - an internal body composed of senior scientific personnel from every line office in the agency - is tasked with developing the 5-Year Research Plan, and provides corporate oversight to ensure that NOAA’s research activities are of the highest quality, meet long-range societal needs, take advantage of emerging scientific and technological opportunities, and shape a forward-looking research agenda.

Significant Adjustments-to-Base (ATBs):

NOAA requests a net increase of 2 FTE and \$4,096,000 to fund adjustments to current programs for Climate Service activities. The increase will provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Service Administration (GSA).

To establish the base operational unit, Climate Service, the following transfers from other NOAA line offices are proposed for a net change of \$0:

Transfer Office	Line	Recipient Office	Line	Amount (\$K)/FTE
OAR	Climate Labs & Coop. Institutes	Climate Service	Climate Research – Modeling	\$14,877/ 53 FTE
OAR	Climate Labs & Coop. Institutes	Climate Service	Climate Research - Physical Sciences	\$2,993/ 25 FTE
OAR	Climate Labs & Coop. Institutes	Climate Service	Climate Research - Chemical Sciences	\$9,203/ 36 FTE
OAR	Climate Labs & Coop. Institutes	Climate Service	Climate Research - Global Monitoring &	\$6,240/ 25 FTE

			Research	
OAR	Competitive Research Program	Climate Service	Climate Research – Modeling	\$4,832/ 15 FTE
OAR	Competitive Research Program	Climate Service	Climate Research - Physical Sciences	\$301/ 5 FTE
OAR	Competitive Research Program	Climate Service	Climate Research - Chemical Sciences	\$4,828/ 4 FTE
OAR	Competitive Research Program	Climate Service	Climate Research - Global Monitoring & Research	\$7,365/ 15 FTE
OAR	Competitive Research Program	Climate Service	Climate Research - Competitive Research Program	\$68,595/ 44 FTE
OAR	Competitive Research Program	Climate Service	Integrated Climate Service - NIDIS	\$9,762/ 1 FTE
OAR	Competitive Research Program	Climate Service	Integrated Climate Service - Regional Services	\$788/ 3 FTE
OAR	Competitive Research Program	Climate Service	Integrated Climate Service - Communication & Education	\$1,400/ 0 FTE
OAR	Competitive Research Program	Climate Service	Observations & Monitoring - Ocean Observations	\$40,378/ 19 FTE
OAR	Competitive Research Program	Climate Service	Observations & Monitoring - Climate Data & Information Services	\$1,014/ 0 FTE
OAR	Competitive Research Program	Climate Service	Observations & Monitoring - Environmental Sciences	\$483/ 0 FTE
OAR	Competitive Research Program	Climate Service	Observations & Monitoring - Atmospheric Observations	\$453/ 1 FTE
OAR	Regional Climate Assessment	Climate Service	Integrated Climate Service - Assessment Services	\$9,000/ 0 FTE
OAR	Climate Data & Information	Climate Service	Climate Research - Competitive Research Program	\$1,133/ 1 FTE
OAR	Climate Data & Information	Climate Service	Integrated Climate Service - NIDIS	\$3,753/ 0 FTE
OAR	Climate Data & Information	Climate Service	Observations & Monitoring - Climate Data & Information Services	\$2,395/ 0 FTE

OAR	Climate Data & Information	Climate Service	Observations & Monitoring - Ocean Data & Information Services	\$12/ 0 FTE
OAR	Climate Data & Information	Climate Service	Observations & Monitoring - Atmospheric Observations	\$4,787/ 2 FTE
OAR	Climate Operations	Climate Service	Climate Research - Modeling	\$320/ 0 FTE
OAR	Climate Operations	Climate Service	Integrated Climate Service - Regional Services	\$593/ 0 FTE
OAR	Climate Other Partnership Programs	Climate Service	Climate Research - Chemical Sciences	\$350/ 0 FTE
OAR	Climate Other Partnership Programs	Climate Service	Climate Research - Global Monitoring & Research	\$100/ 0 FTE
OAR	Climate Other Partnership Programs	Climate Service	Climate Research - Competitive Research Program	\$645/ 0 FTE
OAR	Climate Other Partnership Programs	Climate Service	Integrated Climate Service - Regional Services	\$3,000/ 0 FTE
OAR	W&AQ Labs & Coop. Institutes	Climate Service	Climate Research - Modeling	\$3,456/ 4 FTE
OAR	W&AQ Labs & Coop. Institutes	Climate Service	Climate Research - Physical Sciences	\$7,472/ 22 FTE
OAR	W&AQ Labs & Coop. Institutes	Climate Service	Climate Research - Chemical Sciences	\$3,800/ 0 FTE
OAR	W&AQ Labs & Coop. Institutes	Climate Service	Climate Research - Global Monitoring & Research	\$192/ 1 FTE
OAR	W&AQ Other Partnership Programs	Climate Service	Climate Research - Physical Sciences	\$500/ 0 FTE
OAR	W&AQ Other Partnership Programs	Climate Service	Climate Research - Chemical Sciences	\$500/ 0 FTE
OAR	Research Super-computing	Climate Service	Climate Research - Research Super-computing (PAC)	\$10,379/ 0 FTE
NWS	Local Warnings & Forecasts	Climate Service	Observations & Monitoring - Ocean Observations	\$4,300/ 0 FTE
NWS	Central Forecast Guidance	Climate Service	Observations & Monitoring - Observations, Monitoring & Prediction	\$6,930/ 47 FTE
NWS	Cooperative Observer Network Mod.	Climate Service	Observations & Monitoring - Historical	\$3,734/ 0 FTE

	(NERON)		Climatology Network Modernization (PAC)	
NESS	Archive, Access, & Assessment	Climate Service	Observations & Monitoring - Climate Data & Information Services	\$28,189/ 119 FTE
NESS	Archive, Access, & Assessment	Climate Service	Observations & Monitoring - Ocean Data & Information Services	\$9,319/ 39 FTE
NESS	Archive, Access, & Assessment	Climate Service	Observations & Monitoring - Geophysical Data & Information Services	\$5,946/ 48 FTE
NESS	Archive, Access, & Assessment	Climate Service	Integrated Climate Service - Regional Services	\$0/ 3 FTE
NESS	Climate Data Base Modernization	Climate Service	Observations & Monitoring - Climate Data & Information Services	\$21,179/ 10 FTE
NESS	Coastal Data Development	Climate Service	Observations & Monitoring - Ocean Data & Information Services	\$4,559/ 16 FTE
NESS	Regional Climate Centers	Climate Service	Integrated Climate Service - Regional Services	\$3,500/ 0 FTE
NESS	Environmental Data Systems Modernization	Climate Service	Observations & Monitoring - Environmental Sciences	\$9,511/ 0 FTE
NESS	Environmental Data Systems Modernization	Climate Service	Observations & Monitoring - Climate Data & Information Services	\$0/ 23 FTE
NESS	Integrated Environ Applications & Info Ctr	Climate Service	Observations & Monitoring - Environmental Sciences	\$3,000/ 0 FTE
NESS	NOAA Regional Climate Center program	Climate Service	Observations & Monitoring - Environmental Sciences	\$850/ 0 FTE
NESS	GOES- N (PAC)	Climate Service	Observations & Monitoring – Data Center Modernization (PAC)	\$2,846/ 0 FTE

NESS	CLASS (PAC)	Climate Service	Observations & Monitoring - CLASS (PAC)	\$18,476/ 0 FTE
NESS	EOS & Advanced Polar Data Processing, Distribution & Archiving Systems (PAC)	Climate Service	Observations & Monitoring – EOS & Advanced Polar Data Processing, Distribution, & Archiving Systems (PAC)	\$990/ 0 FTE
Total Climate Service				\$349,228/ 581 FTE

Climate Service requests a technical adjustment to move \$225,899,000 from OAR to CS. These funds will be used to support the formation of the new CS line office.

Climate Service requests a technical adjustment to move \$108,365,000 from NESS to CS. These funds will be used to support the formation of the new CS line office.

Climate Service requests a technical adjustment to move \$14,964,000 from NWS to CS. These funds will be used to support the formation of the new CS line office.

PPA level detail on these requested technical adjustments can be found in the table above.

Administrative Cost Savings:

The Administration is pursuing an aggressive government-wide effort to curb non-essential administrative spending called the Administrative Efficiency Initiative (AEI). In order to be good stewards of taxpayer money the Federal Government should continue to seek ways to improve the efficiency of programs without reducing their effectiveness. As such, the President directed each agency to analyze its administrative costs and identify savings where possible. After reviewing its administrative costs, the Climate Service (CS) has identified \$4,564,000 in administrative savings. CS has targeted a number of areas to achieve these savings. Using NOAALink, CS anticipates saving money through more strategic sourcing of products and services. Consolidation of products will enable buying in bulk to reduce prices. Consolidation of services will also result in dollar savings by reducing the number of contracts to be managed. In the area of human capital, CS expects to reduce its costs by increasing the lapse rate between hires, buyouts, and attrition to reduce its worker compensation costs. Administrative savings in the areas of logistics plans and in general administrative support have been identified by eliminating non-essential relocation expenses, decreasing shipping costs for observational equipment, reducing printing costs by publishing more assessments and booklets on-line and on-demand, lowering supply stocks, and reducing travel associated with training and management conferences. CS has also identified savings tied to IT related items by decreasing the computer refresh rate and other equipment in general. Acquisition reform initiatives also include reducing contract labor where feasible. The \$4,564,000 in administrative savings identified above represent real reductions to the CS funding level and will help reduce overall spending by the Federal government.

Headquarters Administrative Costs:

In FY 2012, CS headquarters will use \$9,000,000 in funds to support general management activities, legal, financial and budgeting, and IT related expenses, as well as supporting facilities and other general operating costs. These funds also include support for service contracts, utilities, field office lease payments, and rent charges from the General Services Administration. The overhead for the Climate Service line office will be distributed from the overhead of existing line offices contributing to the creation of Climate Services: OAR and NESDIS/NESS. This is a reorganization of existing resources to create the headquarters and does not represent growth in overhead costs for NOAA.

Although the CS will incorporate savings as per the AEI above throughout the organization, the organization as proposed in this budget was already established in a streamlined fashion, and the \$9,000,000 reflects this already lean cost structure. Specifically, CS will use headquarters administrative funds to support the following:

Headquarters Program Support Type	Description	FY12 Amount	FY 2012 FTE associated with CS Line Office HQ
General Management & Direction	Includes Assistant Administrator's office, public affairs, information services	\$5,396,500	32.5
CFO Operations	Includes Budget, Finance and Accounting	\$435,000	0
CIO Operations	Includes IT-related expenses and other CIO related activities	\$1,583,000	10.0
CAO Operations	Includes Facilities and Security costs, as well as other CAO related activities	\$450,000	0
Human Resources	All HR services, including EEO	\$1,050,000	7.0
Procurement services, Acquisitions, and Grants Management Operations		\$85,500	0.5
Total, both pre and post AGI		\$9,000,000	50

NOAA recognizes the need to improve the transparency of the policies and procedures used by its line office headquarters to bill component programs for management and administrative services. NOAA is currently re-evaluating, standardizing, and documenting these policies and procedures for each line office. Prior to the beginning of FY 2012, NOAA will publish its policies and procedures for assessing headquarters and administrative costs within the line offices on the NOAA CFO public website along with other budget and finance documents. NOAA looks forward to working with the Congress and other interested parties to increase the transparency and confidence in NOAA's financial management.

APPROPRIATION: OPERATIONS, RESEARCH, AND FACILITIES

SUBACTIVITY: CLIMATE RESEARCH PROGRAMS

The objectives of the Climate Research Programs subactivity are:

- Describe and understand the state of the climate through sustained atmospheric observations and research related to global distributions, trends, sources and sinks of atmospheric constituents that are capable of forcing change in the climate of the Earth;
- Understand and predict climate variability and change from weeks to decades to centennial timescales;
- Conduct advanced mathematical modeling of the climate and Earth systems, including natural climate variability, anthropogenic climate change, weather and hurricane forecasts, El Niño prediction, and stratospheric ozone depletion to improve the prediction of climate phenomena;
- Conduct physical process research to provide a seamless suite of information and forecast products, ranging from short-term weather forecasts to longer-term climate forecasts and assessments; and
- Understand how decision makers use climate information to improve the ability of society to plan for and respond to climate variability and change.

The Climate Research Programs subactivity is the primary center for climate Research & Development (R&D) within NOAA. CS Climate Research supports the climate R&D needs of NOAA, the Department of Commerce, other Federal agencies, states and localities, industry, and the general public for a greater understanding of, and ability to predict climate variability and change to enhance society's ability to plan and respond. NOAA's Climate Research Program is an integral part of the U.S. Global Change Research Program, as mandated by the U.S. Global Change Research Act. The CS operates through a network of CS laboratories and other CS and university-based research programs. The CS research budget is managed through five program, project and activity components: Modeling, Physical Sciences, Chemical Sciences, Global Monitoring and Research, and the Competitive Research Program. These components enable CS to provide innovative and critical leadership in support of NOAA's Strategic Plan Mission Goals: (1) An informed society anticipating and responding to a changing climate and its impacts; (2) Society prepares for and responds to weather-related events; (3) Marine fisheries, habitats, and biodiversity sustained within healthy and productive ecosystems; (4) Coastal and Great Lakes communities that are environmentally and economically sustainable.

Support for this program currently comes primarily from the three Divisions of the Earth System Research Laboratory (ESRL) in Boulder, CO*, the Geophysical Fluid Dynamics Laboratory (GFDL) in Princeton, NJ, and the Climate Program Office in Silver Spring, MD. More information is provided at the following URLs:

- <http://www.esrl.noaa.gov/csd>
- <http://www.esrl.noaa.gov/psd/>
- <http://www.esrl.noaa.gov/gmd/>
- <http://www.gfdl.noaa.gov>
- <http://www.climate.noaa.gov>

*The three divisions of ESRL will become independent laboratories under the CS reorganization.

MODELING

CS modeling research aims to better understand natural climate variability and anthropogenic climate changes via the development and improvement of global Earth System models. Research is conducted at GFDL with the Cooperative Institute for Climate Sciences and a range of national and international partners. Modeling research also includes working cooperatively in NOAA to provide expert assessments of changes to regional, national, and global climate. Research efforts are focused on comprehensive long lead-time climate research fundamental to expanding the scientific understanding of the physical and biogeochemical processes governing the behavior of the atmosphere and oceans and their ecosystems. This research leads to state-of-art global Earth System models, which provide a suite of climate products for decision support by policy makers. To maintain its climate modeling capability, this effort supports a scalable high performance computer system that provides critical computing, storage, and analysis capabilities, as well as model development infrastructure support and data services. This computing program allows NOAA to leverage the world-class research staff at GFDL to advance the Nation's climate program and provide the best possible information and reliable products on climate variability and change to policy-makers and the public.

The Nation's need for short-term warning and forecast products covers a broad spectrum of environmental events, which have lifetimes ranging from several minutes to several months. Modeling efforts also focus on the development of comprehensive numerical global climate models and the frameworks in which the models are embedded. These numerical models are used in the prediction of short-term atmospheric phenomena such as hurricanes and coastal storms, and may also be used to study longer-term events such as the climatology of storm tracks over the oceans and the prediction of developing El Niño Southern Oscillation (ENSO) cycles. The research is developed and transitioned to NOAA operations for the prediction of short-term atmospheric phenomena, including hurricanes, and coastal storms, and El Niño.

PHYSICAL SCIENCES

The Physical Sciences Laboratory provides NOAA with the essential core capability to conduct physical science research across time and space scales. In so doing, the program advances NOAA's abilities to observe, understand and improve the prediction of the behavior of atmosphere, ocean, cryosphere, hydrosphere, land, and related impacts on global-to-local and climate-to-weather scales. The research infrastructure within the program provides the foundation for executing focused observational programs, analyzing physical processes and improving their representation in numerical models, and developing diagnostic and predictive tools required to advance climate, weather and water science. In support of NOAA's mission, the Physical Sciences activity has identified five major strategic goals: 1) Improve observations and understanding of Earth system processes; 2) Integrate climate, weather and water research; 3) Understand, attribute and predict extremes in a variable and changing climate; 4) Advance understanding of regional processes and develop applications related to climate variability and change; and 5) Conduct research and develop prototypes to improve NOAA environmental information and services. To identify user needs for science-based information, the program works closely with its internal partners and a broad external user community. For example, the program interacts and collaborates extensively with external user groups through the NOAA Regional Integrated Sciences and Assessments (RISA) and National Integrated Drought Information System (NIDIS) programs, and through NOAA's Hydrometeorology Testbed (HMT). This research is conducted at the Physical Sciences Laboratory in Boulder, CO

with additional support from CIRES. Physical Sciences research is organized around three primary research activities: Climate Analysis, Water Cycle, and Weather and Climate Physics.

CHEMICAL SCIENCES

The Climate Research Program's Chemical Sciences Laboratory conducts studies that are fundamental to our understanding and prediction of the Earth's climate, the air quality in the United States, and the stratosphere, including the ozone layer. This research is conducted out of the Chemical Sciences Laboratory in Boulder, CO with additional support from CIRES. The goal of the Chemical Sciences research is to understand and quantify the chemical processes responsible for the changes and transformations in the atmosphere related to climate, the stratosphere, and air quality; closely related meteorological, dynamical, and radiative processes are also addressed when necessary. These goals are met through studies in the laboratory, extensive measurements in the atmosphere in focused field studies, diagnostic analyses, representation of these processes in models (in collaboration with others in NOAA and the extramural community), and interpreting the results to elucidate the roles of these processes. The Chemical Sciences Laboratory provides information to NOAA's information customers in government, industry, and the public through the preparation of assessments and evaluation of the current and future states of the Earth's stratosphere (ozone layer), climate, and air quality, including the processes that link them.

GLOBAL MONITORING AND RESEARCH

NOAA's Global Monitoring and Research Laboratory conducts sustained observations and research related to global distributions, trends, sources and sinks of atmospheric constituents that are capable of forcing change in Earth's climate. This research advances climate projections and provides scientific policy-relevant, decision support information to enhance society's ability to plan and respond by providing the best possible information on atmospheric constituents that drive climate change, stratospheric ozone depletion, and baseline air quality. This research is conducted with additional support from CIRES. Sustained observations are conducted at seven manned Global Atmospheric Baseline Observatories, where up to 250 different atmospheric parameters relevant to the study of climate change and ozone depletion are measured. They provide valuable information on (1) the state and recovery of the ozone layer, (2) global carbon dioxide and other greenhouse gases impacting the global climate, and (3) the quality of the air entering and departing the U.S. Measurement of $^{14}\text{CO}_2$ at selected sites is an integral part of GMD's program and has allowed scientists to more accurately interpret atmospheric trends and distributions of GHGs. This laboratory supports several components of the US Global Change Research Program (USGCRP), much of the WMO Global Atmospheric Watch program, which aims to coordinate long term, climate relevant measurements worldwide, and other international programs, including the Global Climate Observing System, the Baseline Surface Radiation Network, and the Global Earth Observing System of Systems. The U.S. scientific community coordinates its carbon cycle activities through the USGCRP North American Carbon Program, which aims to quantify, understand, and project the evolution of global carbon sources and sinks in order to better predict future climate. With input from other agencies, the CarbonTracker analysis tool forms the foundation for routine spatial carbon maps and is essential for other USGCRP reports and products, such as periodic "State of the Carbon Cycle" reports and assessments that keep scientists and policy-makers abreast of progress in understanding the North American carbon cycle.

COMPETITIVE RESEARCH PROGRAM

The Competitive Research Program is proposed to be managed out of the CS Line Office in Silver Spring, MD, which funds high-priority climate science within NOAA and with our academic

partners to advance understanding of Earth's climate system and its atmospheric, oceanic, land, and snow and ice components. This science contributes to knowledge about how climate variability and change affect our health, economy, and well-being. The program supports research that is conducted in regions across the United States, at national and international scales, and globally. The program also provides strategic guidance and oversight for the agency's climate science and services programs.

The grant activities are organized within four program activities:

Climate Monitoring

The Climate Monitoring (CM) activity contributes to the development of continuous records and analyses of a range of ocean and atmosphere parameters. CM ensures that the data sets researchers need to understand the climate system are available for analysis. CM supports projects that document and study variations in climate on time scales ranging from less than one year to periods of 100 years and longer, i.e., both instrumental and paleoclimate eras. CM also provides data and information management support for national and international climate assessment projects. Analysis products support other program efforts in modeling of the climate system and development of targeted services to better inform society about climate impacts and response options.

CM comprises the following focus areas:

1. Develop and maintain long time-series indicators of climate variability and change
2. Develop and maintain standard data sets for initialization and evaluation of climate forecast models, assessments of climate change, and informed risk management
3. Perform diagnostic studies of observed patterns of climate variability and change on global to regional scales

Earth System Science

The Earth System Science (ESS) activity provides the process-level understanding of the climate system through observation, modeling, research analysis and field studies to support the development of improved climate models and predictions in support of NOAA's mission. Major activities include:

1. Identifying and interpreting the physical climate mechanisms involving land-atmosphere-ocean-ice interactions responsible for intraseasonal to multi-centennial climate variability, including abrupt climate change
2. Identifying the location, magnitude, dynamics, and variability of global carbon sources and sinks; understanding how ecosystems are impacted by changes in carbon cycling and associated changes in climate
3. Improving understanding of the role of aerosols and chemically-active greenhouse gases in the global climate system

ESS-sponsored research is carried out at NOAA and other Federal laboratories, NOAA Cooperative Institutes, and academic institutions and is coordinated with major national and international scientific bodies including the World Climate Research Programme, the International Geosphere-Biosphere Programme, and the U.S. Global Change Research Program.

Modeling, Analysis, Predictions, and Projections

The mission of the Modeling, Analysis, Predictions, and Projections (MAPP) activity is to enhance the Nation's capability to predict variability and changes in Earth's climate system. MAPP focuses on the coupling, integration, and application of Earth system models and analyses across NOAA, among partner agencies, and with the external research community. Primary objectives include 1) improving Earth system models, 2) supporting an Earth System Integrated Analysis capability, 3) improving methodologies for global and regional-scale analysis, predictions, and projections, and 4) developing integrated assessment and prediction capabilities relevant to decision makers based on climate analyses, predictions, and projections. MAPP includes targeted infrastructure support, competitive grants programs, and mechanisms to support transferring research findings into NOAA's operations.

Climate and Societal Interactions

The NOAA Climate and Societal Interactions (CSI) activity provides national leadership in developing interdisciplinary science and services, including assessments, for application in climate-sensitive sectors and regions. The goals of CSI are: 1) identification and articulation of user-community requirements in multiple sectors, initially with regard to water resources and the coastal zone then branching to related sectors; 2) research and development of innovative and broadly applicable approaches to support decision-making, especially for risk characterization, both through a broad network of regionally scoped, long-term efforts and stakeholder-specific efforts; and 3) promotion of the transfer of knowledge, tools, and products across climate service development efforts (within NOAA, across the Federal government, nationally, and internationally).

In addition, several of CSI's initiatives support the Coping with Drought initiative of the National Integrated Drought Information System (NIDIS) by supporting regions threatened by drought. CSI's focus areas are:

1. CSI-Regions supports regional, multi-sectoral research primarily supported by the Regional Integrated Sciences and Assessments (RISA) teams.
2. CSI-Water addresses the needs of a specific stakeholder or set of stakeholders grappling with pressing climate-related water resource challenges.
3. CSI-Coasts addresses the needs of a specific stakeholder or set of stakeholders grappling with pressing climate-related issues in the coastal zone.
4. CSI-International supports decision-making and stakeholder networks internationally through the International Research Institute for Climate and Society (IRI), and several smaller scale projects undertaken through the CSI-Regions, Water and Coasts initiatives.
5. CSI-Transitions builds operational and quasi-operational capacity by transitioning the knowledge, tools, and products developed by CSI funded efforts and by the community-at-large to government entities and partners.

Information and data from the above activities are used to assess climate forcing, climate feedbacks, climate response, ozone depletion and baseline, urban, and regional air quality, to develop and test diagnostic and predictive models, and to keep the public, policy makers, and scientists abreast of the current state of our atmosphere. This program addresses the NOAA Next Generation Strategic Plan goal: Long Term Climate Adaptation and Mitigation objectives of (1) Improved scientific understanding of the causes and effects of climate variability and change, (2) Authoritative Assessments of the state of the climate, the likely impacts of climate change, and Needs for future climate science and services, (3) Mitigation and adaption efforts supported by climate services and of climate risks integrated into decision-making processes,

and (4) A climate-literate public that understands its vulnerabilities to a changing climate and makes informed decisions.

Deliverables

Modeling

Schedule/ Milestones	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
National and International Assessment Products	Complete model runs to be submitted to IPCC AR5; IPCC lead authors commence work	Submit papers for inclusion in IPCC AR5 report; IPCC lead author work continues	IPCC AR5 Working Group I report completed and released.	Use ESM to conduct suite of regional climate change projections	Develop quarter degree model for reduction in tropical uncertainties of climate projections	Continuing ESM development
Experimental Decadal Forecasts	Decadal Predictability studies	Decadal Predictability studies continue	Develop capability for nowcasting of Atlantic MOC	Extend decadal predictions to applications: drought and hurricanes	Decadal projections using higher resolution coupled model	Decadal Predictability studies continue

- Improved understanding decadal-to-centennial climate change, variability and predictability, and increasing confidence in climate projections, using coupled-climate model (CM2.5) at 4 times the resolution of recent IPCC-class coupled climate models.
- Robust simulations of regional climate change around the world (including tropical storms) using 25-km resolution global atmospheric model.
- Improved realism of the NOAA Earth System Models by closing the nitrogen cycle, and major feedback on the global carbon cycle.
- Reduction in percentage uncertainty in possible twenty-first century sea level rise
- Development of initial physical formulations to incorporate soot and dust aerosol impacts on snow and ice albedo in climate models, essential to developing a predictive understanding of Arctic climate change.

Physical Sciences

Climate Analysis

Schedule/Milestones	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Increase skill of medium range forecasts of tropical temperature (Number of forecasts with increases /year)	8	9	10	12	16	18

Increase skill of medium range forecasts of tropical precipitation (Number of forecasts with increases /year)	1	1	2	3	8	9
% skill score improvement in experimental U.S. Seasonal forecasts	20	21	22	23	24	25
Number of new experimental climate products and services developed (Number/year)	1	1	1	2	2	3
Number of experimental products introduced in operational setting (Number/year)	1	1	1	1	2	2

- Produce an assessment of the importance of tropical intra-seasonal variability on the forcing of global climate variability.
- Implement a next generation historic reanalyses at higher resolution using an updated multi-model ensemble approach, improved methods for assimilating surface variables, and better representation of forcing uncertainties.
- Prototype a probabilistic prediction system for North American drought based on antecedent conditions and remote forcings.
- Assess the causes for recent variations in U.S. national and regional seasonal temperature, precipitation and drought.
- Deliver a global EnKF system to operational forecast centers for pre-operational testing.

Water Cycle

- Assess and document the ability of gap filling radars to augment legacy observing systems (e.g. NEXRAD) in the west to provide better precipitation and water supply information.
- Conduct field experiments (HMT & CalWater) focused on extreme precipitation events and their role in the water cycle - required for better climate projections and forecasts for flood and water supply.
- Couple ensemble precipitation forcing to hydrological models for two key watersheds.
- Deliver a preliminary report on quality of precipitation and runoff forecasts.
- Document and coordinate model development and operations plan to increase number of communities served by stream and river forecasts for the CERIS region.

Weather and Climate Physics

- Archive 12-months climate data SEARCH observatories at Alert and Eureka.
- Bring SEARCH Tiksi observatory to 30% capacity.
- Make public version 10 of the PSD hurricane flux algorithm.
- Generate data archive of ship and aircraft observations from participation in the NOAA/NSF DYNAMO field program in the Indian Ocean.
- Test the PSD W-band radar on a NOAA P-3 in flight; produce report on the results.

Chemical Sciences

Schedule/ Milestones	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Climate-Air Quality field campaigns	Analyses of California climate and air quality study	Climate and air quality study in the eastern USA	Analyses of eastern USA climate and air quality study	To be based on earlier findings		To be based on earlier findings
Field campaigns on aerosol-cloud interactions	Continue analysis of cirrus cloud data; Model validation on aerosol-cloud interactions	Continue model validation on aerosol-cloud interactions	To be based on earlier findings		To be based on earlier findings	
Field campaigns on upper tropospheric water vapor and cirrus	Evaluate performance of prototype water vapor instrument	Deploy new water vapor instrument	Analyze measurements of water vapor	To be based on earlier findings		To be based on earlier findings
Climate research on upper tropospheric water vapor to improve models that provide a predictive understanding of the physical processes	Conduct analyses to determine role of upper tropospheric water vapor in climate	Continue analyses	To be based on earlier findings	Continue analyses	To be based on earlier findings	Continue analyses
Laboratory study of climate agents	Initiate study of compound #1 to address key uncertainties	Continuing	Initiate study of compound #2 to address key uncertainties	Continuing	Initiate study of compound #3 to address key uncertainties	Continuing
Modeling study of climate processes and agents	Initiate study #1 to address key uncertainties	Continuing	Initiate study #2 to address key uncertainties	Continuing	Initiate study #3 to address key uncertainties	Continuing
Laboratory studies related to air quality	Initiate kinetic study of compound #1 to address key uncertainties	Continuing	Initiate kinetic study of compound #2 to address key uncertainties	Continuing	Initiate kinetic study of compound #3 to address key uncertainties	Continuing

- Top-down evaluation of greenhouse emission inventories using data from the California field campaign (CalNex).
- Assessment of climate/air quality interactions in California using ship, aircraft (WP3 and Twin otter), and ground station data from California field campaign (CalNex).
- Independent assessment of measurement techniques and sensors used to quantify water vapor concentrations throughout the atmosphere and a new, fully automated, instrument to measure water vapor concentrations on board high-altitude research aircraft

- Analyses of models and data to quantify the role of ozone, water, and other forcing agents on climate and stratospheric ozone.
- Assessment of the impact of aerosols on cloud systems using data from the SE Pacific, the Caribbean, and the California Coast
- Regional assessment of black carbon emissions – California.
- Laboratory assessment of one chemical reaction relevant to stratospheric ozone chemistry and climate-chemistry coupling.
- Evaluation of climate-related properties of one compound proposed as a replacement for ozone-depleting substances.
- An evaluation of the role of boundary layer transport and processes in complex terrain, such as in California, using field measurements and modeling.

Global Monitoring and Research

Schedule/Milestones	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
High quality, calibrated, traceable measurements of atmospheric species (~250) climate & radiatively important species at each of the 5 baseline observatories (Total #/yr/site)	250	250	250	250	250	250
NOAA Annual Greenhouse Gas Index (AGGI) Indicator: Number of Updates Unit of Measure: Cumulative number of updates	7	8	9	10	11	12
NOAA Ozone Depleting Gas Index (ODGI) Indicator: Number of Updates Unit of Measure: Cumulative number of updates	6	7	8	9	10	11
# Within NOAA GHG Collaborations Funded	3	3	3	3	3	3
# Non-NOAA GHG Collaborations Funded	5	5	5	5	5	5
Tall Towers Installed (Cum Total #)	8	8	8	8	8	8
Aircraft Sites Operational (Total #/yr)	14	14	14	14	14	14
Surface Sampling Sites (Cum Total #)	14	14	14	14	14	14
Aircraft Profile Sample Frequency (% to meet GPRRA requirement)	35%	35%	35%	35%	35%	35%
Programmable Flask Package (PFP) Sample Frequency (current/100% req.)	.2	.2	.2	.2	.2	.2
Carbon Uptake Regions Defined (Carbon Tracker)	1	1	1	1	1	1

- Continue to conduct sustained observations and research related to global distributions, trends, sources and sinks of atmospheric constituents that are capable of forcing change in

the climate of the Earth. Continue to advance climate projections and provide scientific policy-relevant, decision support information to enhance society's ability to plan and respond. Continue research of improving instruments, reducing uncertainty values, economies of scale, calibration techniques, and statistical analysis of data.

- Updates to Daily/Monthly/Annual GHGP Products suite as appropriate (<http://www.esrl.noaa.gov/gmd/dv/>).
- Publish Annual Greenhouse Gas Index (<http://www.esrl.noaa.gov/gmd/aggi/>) and Ozone Depleting Gas Index Update (<http://www.esrl.noaa.gov/gmd/odgi/>).
- Updates and refinement to CarbonTracker (<http://www.esrl.noaa.gov/gmd/ccgg/carbontracker/>)
- Maintain Carbon and Atmospheric Observing System at current capacity of 8 Tall Towers and 14 Aircraft sites.
- Leverage existing capabilities into the Climate Service.
- Maintain current Arctic observation capability in support of Arctic science as directed by the AGM/NGSP
 - Establish cooperative methane monitoring site in central Alaska.
 - Expand black carbon (BC) measurements at all stations surrounding and in the Arctic. Black carbon monitoring is becoming a focus for NOAA climate studies as it may be second only to carbon dioxide in climate warming potential in the Arctic.
 - Develop a BC “SootSonde” deployable from UAVs. UAV monitoring of the Arctic atmosphere is a high priority in the NOAA mission and black carbon a priority within that mission.
 - Establish equipment and procedures for measuring black carbon profiles from balloons.

Competitive Research

Climate Monitoring

Schedule/Milestones	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Grants awarded in support of the development and delivery of climate analysis products, such as climate indices, USGCRP deliverables, Climate Data Records, etc. (number per year)	16	16	16	16	16	16
Research climate data sets transitioned to operations (number per year)	1	1	1	1	1	1
Paleoclimate reconstructions (number per year)	4	4	4	4	4	4

FY 2011-16: The Climate Program Office will solicit annual calls for proposals for competitive awards. These awards will address priority research topics in the areas of climate monitoring; earth system science; modeling, analysis, predictions, and projections; and climate and societal interactions.

The deliverables for the competitive grants program are based upon the call for proposals in FY 2011; most of these projects will span 2-3 years. Priorities targeted for the FY 2011 call for research proposals include:

- Climate Monitoring- Climate data set development and diagnostics to identify climate variability and change; Climate change detection and attribution with a focus on regional scales; and paleoclimatology with a focus on reconstructions of the late Holocene
- Earth System Science- Decadal climate variability and predictability, including identification of climate signals such as the Atlantic Meridional Overturning Circulation; Understanding and improving prediction of Tropical convection, with a focus on climate processes being studied as part of the Dynamics of the Madden-Julian Oscillation (DYNAMO) field campaign; Improving the understanding and modeling of land surface processes/interactions; Global carbon cycle, including variability of carbon sources and sinks and carbon cycle/ecosystem interactions; aerosols, atmospheric chemistry and climate with a focus on understanding indirect effect of aerosols on clouds and transformation of ice nuclei.
- Modeling, Analysis, Predictions, and Projections- Development of next-generation global climate models and evaluate uncertainties in regional-scale climate predictions/projections; Develop an integrated drought capability incorporating research advances in climate prediction, land-surface and hydrologic modeling, and data assimilation; Evaluate reanalysis data sets.
- Climate and Societal Interactions- Initiate three new RISA programs and advance regional assessment services; Climate impacts on urban water resource planning and drought; Coastal resource management in a changing climate, with a focus on coastal ecosystems and sea level rise; transition of water resource and coastal information products into operational settings, Integration of climate information into resource management and planning models and processes; White papers on climate impacts and adaptation issues for resource managers and planners; Analyses and communication of uncertainties surrounding climate predictions and projections; Improvements to climate impacts models; Peer-reviewed science papers related to climate impacts and adaptation issues; Newsletters containing climate impacts/prediction information and articles on climate impact issues of significance to the region; Presentations on research results to resource managers, planners and scientists; Workshops, surveys, focus groups, and ongoing dialogue with decision makers in the region.
- Climate Services in the Coastal Zone- Integrated research, from observations and modeling to decision support, focused on coastal inundation and sea level rise at regional scales on multi-year to multi-decadal time scales.

Performance Goals and Measurement Data

Modeling

Performance Measure:	FY	FY	FY	FY	FY	FY
	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
Cumulative number of new decadal prototype forecasts and predictions made with high-resolution coupled climate models	1	2	3	4	5	6
Description: One of the goals of this activity is to develop new prototype forecasts and predictions on decade time-scales for climate changes and impacts such as sea level rise, Arctic climate impacts, and rapid climate change. These forecasts and predictions are						

dependent on the development of state-of-the-art climate models.

Physical Sciences

Performance Measure:	FY	FY	FY	FY	FY	FY
	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
Skill score improvement in experimental U.S. Seasonal forecasts (<i>% improved skill score</i>)	22	23	24	25	26	27
Description: Accurate temperature forecasts are critical to many sectors of the national economy. This measure compares actual observed temperatures with forecasted temperatures from areas around the U.S. The skill of seasonal prediction for surface temperature over the U.S. is quantified based on Heidke Skill Score (HSS). The computation of HSS is only for the locations where a seasonal forecast is made. Heidke skill score is one of several accepted standards of forecasting in the scientific community.						

Chemical Sciences

Performance Measure:	FY	FY	FY	FY	FY	FY
	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
Atmospheric emissions characterized and air quality impacts quantified for potential biofuels (e.g., switchgrass). Number of potential biofuels characterized.	0	0	1	1	2	2
Description: The identification and quantification of atmospheric emissions from proposed biofuels will be used to assess the integrated impacts of these crops and the efficacy of these fuels as replacements for fossil fuels. These assessments will be documented in peer-reviewed publications.						

Global Monitoring and Research

Performance Measure:	FY	FY	FY	FY	FY	FY
	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
Reduced uncertainty in the magnitude of the North American Carbon Sink (million tons Carbon/year) (16b)	400	400	400	400	400	400

Competitive Research Program

Performance Measure:	FY	FY	FY	FY	FY	FY
	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
Number of regionally and sectorally focused climate impacts and adaptation studies communicated to decision makers.	41	41	41	41	41	41
Description: Number of peer-reviewed publications and reports published and released in one fiscal year. The publications/reports are developed through interaction with and/or communication to stakeholders. Publications and reports are collected from investigators						

conducting climate impacts and adaptation research in cooperation with stakeholders. The goal of this research is to better understand and enhance the use of NOAA products and information to meet user requirements for natural resource management information in various sectors (e.g. drought and water resources, fire risk, ecosystem and coastal impacts, sea-level rise, human health, agriculture, etc.)

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Program Changes for FY 2012:

Modeling: Earth System Modeling: Urgent Climate Issues (Base Funding: 4 FTE and \$2,600,000; +10 FTE and +\$6,980,000)

NOAA requests an increase of 10 FTE and \$6,980,000 for a total of 14 FTE and \$9,580,000 to enable continued development and use of state-of-the-art Earth System Models to address urgent climate issues, including sea level rise and Arctic climate change.

Proposed Actions

NOAA will use this funding to expand capacity with a combination of 10 FTE, post-doctoral researchers, contracts and grants managed primarily by its Geophysical Fluid Dynamics Laboratory with assistance from the Earth System Research Laboratory. The Climate Program Office's Climate Variability and Predictability Program will manage the grants for this request. This will allow NOAA to continue development of Earth System Models to:

Reduce uncertainties in sea level rise projections (\$2,580K) including: an ice sheet dynamics model, ocean-ice shelf and ocean-iceberg interactions, ice shelf cavity circulations and regional variations in sea level rise. This includes the development of an interoperable global ocean modeling capability for climate based on community standards, with routine global ocean data assimilation capabilities linked to Global Ocean Observing System observations and a nesting capability for coastal ecosystem models to assess the impact of climate change on ocean and coastal ocean ecosystems.

Reduce uncertainties in the terrestrial carbon cycle and future biogeochemical feedbacks on climate (\$2,150K) through more realistic model treatment of the terrestrial biosphere including: modeling the nitrogen and phosphorous cycles, biomass burning, wetland and freshwater biogeochemistry, and land-use management. This includes data assimilation.

Address gaps in the understanding of the Arctic climate system, including rapid changes and future projections (\$900K). The sea ice component of the NOAA's Earth System Model will be enhanced to include ridging of ice sheets and improved radiation treatment. Influences of soot and dust aerosol on ice albedo will be examined. A new modeling framework for Arctic climate change will be developed for assessing various causes of past Arctic changes.

Augment Decadal Climate Predictions and Abrupt Change (\$1,350K) to complete decadal prediction model evaluation, assess predictability of high-impact climate extremes (heat waves, flooding, etc.) and assess the causes of past/ongoing decadal climate changes.

Statement of Need and Economic Benefits

Numerical models that simulate the Earth System are the Nation's principal tool for understanding past climate and predicting future climate. The increased demand for projections of climate change at regional scales and understanding of potential climate impacts requires increased modeling resolution and realism, as well as improved scientific understanding of the reliability of models and downscaling techniques for various regional climate applications. This effort to address urgent climate issues by improving Earth System Models, developing decadal prediction systems, and integrating earth system model development with regional ecosystem and coastal process models will be supported directly by recent investments in high performance

computing resources for climate modeling in the American Recovery and Reinvestment Act of 2009. Societal benefits include:

- Sea level rise has the potential to be among the most costly consequences of climate change. Coastal states support 81 percent of the U.S. population and generate approximately 83 percent (\$11.4 trillion in 2007) of U.S. gross domestic product (GDP) (National Ocean Economics Program, “State of the U.S. Ocean and Coastal Economies,” 2009). The homes and livelihoods of millions of Americans and infrastructure worth billions would be imperiled by sea level rise of a few feet. Improved models to help narrow uncertainty on future global sea level rise, as well as its regional variations, will help decision-makers form mitigation and adaptation responses to mitigate costs to society and harm to near-shore ecosystems.
- Creating links between global ocean models and regional and coastal ocean models and assimilating ocean data into ocean modeling systems for predictions of ecosystem parameters will serve ecosystem managers, because many marine ecosystems are sensitive to changes in ocean conditions associated with climate change.
- Reduced uncertainty in climate change projections will help decision makers consider strategies to mitigate or adapt to the impacts of climate change. For example, the absence of an interactive carbon cycle was a serious limitation in the global climate models used for the Intergovernmental Panel on Climate Change Fourth Assessment Report (IPCC AR4), which will be addressed to better understand how the carbon cycle and its feedbacks reduce or amplify anticipated global warming by several degrees by 2100.
- Better prediction of rapid changes in the Arctic will help decision-makers address key impacts on: Arctic citizens and their livelihoods; Arctic ecosystems; shipping; homeland security; fisheries; and strategic energy resources.
- Developing decadal climate predictions of sea surface temperature will lead to skillful decadal predictions of several phenomena of great economic importance, including hurricanes, drought, and heat waves, and ecosystems.

Schedule & Milestones

FY 2012: Develop new modeling capabilities and initiate synthesis efforts for application to Earth System Models.

FY 2013: Further develop and implement new Earth System Modeling capabilities for use in climate change assessments. Perform initial integrations of new Earth System Models. Continue process studies and report results in peer-reviewed publications.

FY 2014-16: Continue long-term development and refinement of Earth System Modeling capabilities for use in future national and international climate change assessments. Simulate 20th and 21st century sea level rise using prototype next-generation models of ice sheet dynamics and other physics. Report on Arctic climate change assessment. Communicate Earth System Modeling research findings to policymakers and other stakeholders through assessments, publications and climate services.

Deliverables

- Sea level rise projections with improved model physics, representation of physical processes, and reduced uncertainty relative to current projections & sea level forecasts of near shore waves/extremes.

- A common global ocean modeling framework based on community standards that incorporates features of several leading ocean models and enables nesting with coastal models and routine global ocean data assimilation.
- State-of-the-art Earth System Models with improved representation of the terrestrial biosphere and reduced uncertainty in future carbon cycle feedbacks.
- Assessments of the causes of recent and ongoing Arctic climate changes through improvements to sea ice modeling and Arctic climate process models. More confident projections of future climate changes in the Arctic.
- A decadal climate prediction system, including an assessment of the level of predictability realizable from the system, in terms of sea surface temperature predictions, and predictions of related changes in extreme events (hurricane activity, drought, heat waves, flooding, etc.).
- Enhanced contributions to assessments of human impacts on climate through inclusion of more realistic physical processes & important feedbacks in climate models; greater confidence in projections of regional climate impacts.

Performance Goals and Measurement Data

Performance Measure:	FY	FY	FY	FY	FY	FY
Number of regional scale projections for assessments & decision support (cumulative).	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Increase	0	3	5	7	8	8
Without Increase	0	2	2	2	2	2
Description: Regional scale projections will contribute to international assessments (e.g. IPCC AR5, scheduled for 2013), national assessments under the U.S. Global Climate Research Program, and other assessments as requested. The number of meaningful regional projections possible will increase as NOAA's Earth System Model increases in realism and complexity. Examples of regional scale projections include: regional sea level rise projections that require explicit representation of the global eddy field in the ocean models; projections of parameters essential to ocean and coastal ecosystem forecasting; assessment of regional carbon budgets; and projections of climate change in the Arctic region that require improved sea ice models.						

Performance Measure:	FY	FY	FY	FY	FY	FY
Percentage uncertainty in possible 21 st century sea level rise (0-1m = 100% uncertainty)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Increase	75%	74%	65%	55%	50%	40%
Without Increase	75%	74%	73%	72%	71%	70%
Description: This metric is calculated using the IPCC 4 th Assessment Report estimates for the range of 21 st century global-mean sea level rise. Completion of the proposed effort will reduce the uncertainties by almost half as a result of modeling that better captures the more accurate measurements of ice-sheet discharge, thermal expansion, and regional anomalies due to ocean circulation and heat storage. Reducing the uncertainty in sea level rise will allow government and industry to have better information on projected sea level rise and therefore tailor their planning and actions to address the impacts.						

PROGRAM CHANGE PERSONNEL DETAIL

Activity: Climate Research Programs
 Subactivity: Modeling

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Physical Scientist	Princeton, NJ	ZP IV	10	92,259	922,590
Oceanographer	Princeton, NJ	ZPIII	1	64,729	64,729
Physical Scientist	Boulder, CO	ZP-IV	2	87,815	175,630
Total			<u>13</u>		<u>1,162,949</u>
less Lapse		25%	<u>3</u>		<u>290,737</u>
Total full-time permanent (FTE)			10		872,212
2011 Pay Adjustment (0%)					0
2012 Pay Adjustment (0%)					0
TOTAL					<u>872,212</u>

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	10
Other than full-time permanent	0
Total	<u>10</u>
Authorized Positions:	
Full-time permanent	13
Other than full-time permanent	0
Total	<u>13</u>

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Climate Research Programs
Subactivity: Modeling

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$872
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>872</u>
12 Civilian personnel benefits	201
13 Benefits for former personnel	0
21 Travel and transportation of persons	21
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	360
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	585
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	4,941
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>6,980</u>

Physical Sciences: Water Resources Research to Operations (Base Funding: 13 FTE and \$4,619,000; +0 FTE and +\$7,672,000): NOAA requests an increase of \$7,672,000 and 0 FTE for a total of \$12,291,000 and 13 FTE to research, develop and implement Integrated Water Resource Services, a NOAA Regional Collaboration Priority. CS and OAR laboratories and National Weather Service river and weather forecast centers will partner to develop and transition to operations new precipitation, river, estuary and coastal flood-forecast capabilities. Because of the importance of extreme events in the climate system, this effort will help meet key societal challenges and service delivery needs related to water resources and extreme events for the CS.

Proposed Actions

NOAA seeks to support two projects designed to improve our Nation's water forecasts: (1) The Hydrometeorological Testbed (HMT), which is focused on reducing regional precipitation observation and forecasts errors by 50% for 0-3 day forecasts of extreme precipitation and will support future development of a Hydroclimate Testbed (HCT); (2) Coastal Estuary River Information System (CERIS), which is intended to increase the number of communities for which detailed stream and river forecasts are available. With the projected increases in sea level and sensitivity to storm surges, improved forecast tools are essential for the Nation's coastal rivers and estuaries.

The Hydrometeorology Testbed (HMT) (\$6,472,000) focuses on accelerating the development and infusion of new observing technologies and strategies, precipitation forecast model improvements, and new precipitation science into NWS operational forecasts and CS service delivery. Because observing and forecasting precipitation varies by region of the country and by season and is sensitive to short-term climate variability, NOAA has identified both west and east coast areas for investigation. Specifically NOAA will establish representative test-beds in California and the Carolinas. Field experiments are conducted to deploy new observing systems, conduct experimental model forecasts, test new forecasting techniques in concert with operational weather and river forecast offices, and examine observed extremes in their climate context. Subsequently, laboratory studies will analyze and interpret the data collected during field programs to improve understanding of underlying physical processes prototype improved forecasts, observational interpretation algorithms, forecast decision aids, and information products. Finally, NOAA will feed demonstrated advances to NWS and CS operations.

CERIS (\$1,200,000) develops and transitions to operations: (1) new river, estuarine, and coastal flood-forecast capabilities and (2) estuarine ecosystem health using the Tar River Basin and Pamlico Sound in North Carolina for operational prototyping. This initiative will seek to quadruple the number of communities receiving stream and river forecasts in Tar River Basin and will be coordinated with Sea-Level rise forecasting efforts in the CS and NWS and ongoing coastal programs in NOS. Because the Tar River Basin is representative of other river basins and NOAA has existing partnerships in the area, it is an ideal location for a pilot project. CERIS is designed to collect data and information related to freshwater supply, coastal watersheds, and flooding (including flash flooding and inland flooding from hurricane rainfall and storm surge) in order to mitigate natural hazards; couple atmospheric, river, and estuarine models to develop information for decision-support tools; and enable outreach and education that gets the outputs of science into the hands of policy makers and the public.

Statement of Need and Economic Benefits

NOAA is the only Federal agency with the legislative mandate to provide surface water forecasts. Such forecasts are currently not provided along our Nation's coasts. To forecast these areas, NOAA must research, develop and deliver water forecasting services for coastal areas. Commerce and populations along the coasts will benefit from these forecasts, especially those associated with extreme events. Population concentrations, drought caused by recent climate changes, and "just-in-time" commerce have made water resource and precipitation monitoring and forecasting critical challenges. At the same time, water can be the most dangerous natural hazard. In most years, flooding causes more deaths and damage than any other type of severe weather. In many years it is common for three-quarters of all Federal declared disaster declarations to be due, at least in part, to flooding. (http://www.weather.gov/oh/hic/flood_stats/index.shtml) Compounding the problem, quantitative precipitation forecasts, particularly for significant rain events (>1 inch of rain) on national average can have an error of 0.5 inch or more and are not well represented in extended range forecasts. Such errors can severely compromise the accuracy of river forecasts and degree of flooding. HMT is focused on reducing regional precipitation observation and forecasts errors by 50% for zero-to- three day forecasts and to extend the science to precipitation at intraseasonal to interannual time scales. CERIS is intended to remedy the fact that stream and river forecasts are provided today for approximately 10% of communities. This initiative will provide receiving stream and river forecasts in the tidal areas of the Tar River Basin. Studies show agriculture can realize a \$30 per acre/year yield increase (+20% profit) when irrigated corn production is based on weekly water resource forecasts. Other studies have shown that there is \$12 in realized benefits each year for every one-time investment of \$1 in river forecast improvements. Increasing the lead times of flash floods and other floods will save lives and mitigate property damage. Another study has shown that with 4 hours of flood mitigation time, the damage to a residential property can be reduced by as much as 72%.

Schedule & Milestones

- Complete processing and delivery of quality controlled precipitation observations from HMT-West field phase for hydrologic modeling; adapt a high-resolution hydrologic model to the Tar River watershed in North Carolina; For HMT-west, set up, run, and verify a high resolution ensemble weather modeling systems and deliver a preliminary report on model verification of Quantitative Precipitation Forecasts (QPF) , moisture flux and snow level (key elements for flood forecasting). Develop plan and coordinate path to operations for HMT observation systems. (FY 2012)
- Assess and document the ability of gap filling radars to augment legacy observing systems (e.g., NEXRAD) in the west. Document and coordinate model development and operations plan to increase number of communities served by stream and river forecasts for CERIS region. Couple ensemble QPF models to CA and Tar River hydrological models & deliver a preliminary report on quality of forecast runoff and probabilities. (FY 2013)
- Deliver algorithms for implementation on the NWS AWIPS systems to assist forecasters in reducing precipitation forecast errors. Prepare and coordinate plan to develop, evaluate and make operational new generation of global uncertainty forecasts for precipitation. Provide a plan for implementing coupled precipitation and hydrological models in operations. (FY 2014)
- Assess and document various observing system strategies used in the HMT eastern region to reduce observing errors by 50%. Deliver final report on new data assimilation methods for global forecasts to address uncertainty in extended precipitation forecasts. Collect and

process atmospheric and river stage data sets suitable for developing and testing coupled models during CERIS. (FY 2015)

Deliverables

- Transition Plan to transition new HMT observation systems to operations. (2012)
- Report documenting utility of gap-filling radars and other new observing systems along the western slopes and coast (2013)
- Report on deterministic and probabilistic verification of Quantitative Precipitation Forecasts (QPF) quality of forecast runoff, and river flow (2013)
- Algorithms for the NWS operational implementation on the AWIPS information technology system for improved analysis and forecasting of western US precipitation (2014)
- New generation global-uncertainty forecasts for precipitation plan (2014).
- HMT eastern region observing system strategies report (used to reduce precipitation errors by 50%) (2015)
- Prototype Extreme Precipitation Information System (EPIS) with regionally specific input and output environmental data sets for atmospheric and river forecast model development and testing in the HMT west region. (2015)
- Transition to operations a new Coastal Estuary River Information System (CERIS) and prototype it in Tar River and Pamlico Sound (2016)

Performance Goals and Measurement Data

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Demonstrate improved Regional River Flood Warning Lead Time and absolute timing error <i>(change from baseline in hours/hours)</i>	Target	Target	Target	Target	Target	Target
With Increase	Establish baseline	New baseline	+0.2/-0.2	+0.4/-0.4	+0.6/-0.6	+0.8/-0.8
Without Increase	Establish baseline	New baseline	+0.1/-0.1	+0.2/-0.2	+0.3/-0.3	+0.4/-0.4
Description: NOAA is evaluating possible adoption of a new operational performance measure for “River Flood Warning Lead Time,” which focuses on larger rivers and longer-lived flooding that is not currently assessed using the existing “Flash flood warning lead time,” which focuses on smaller and short-lived flood events. Baselines for the new performance measures must be established, and the measures shown here are the incremental improvements expected above those baselines.						

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Demonstrate Flash flood lead-time in minutes.	Target	Target	Target	Target	Target	Target
With Increase	49	52	54	56	58	60
Without Increase	49	49	49	49	49	49

Description: The measure “without increase” shown here is the NWS operational GPRA measure for flash warning lead times in minutes. The measure “with increase” is a warning lead-time hypothesis using these new technologies. This research will seek to demonstrate that the current targets can be improved to the amounts shown.

	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Output 1: Number of flood and precipitation forecasting tools transitioned into NWS operations						
With Increase Number of prototype systems transitioned/cumulative		2	3	4	5	6
Without Increase	0	0	0	0	0	0
Output 2: Field projects (#)/S&T Advances						
With Increase Number of field demonstration projects/Number of Science & Technology Advances		2/4	3/4	3/4	3/4	3/4
Without Increase	0	0/0	0/0	0/0	0/0	0/0
Output 3: Prototype improved forecasts of extreme precipitation with one day lead time (change from baseline in CSI%/Absolute error inches)						
With Increase	None	Establish baseline	New baseline	2/-0.1	4/-0.2	6/-0.3
Without Increase	None	Establish baseline	New baseline	1/-0.0	2/-0.1	3/-0.1

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Climate Research Programs
Subactivity: Physical Sciences

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	1,200
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	4,200
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	1,522
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	750
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>7,672</u>

Global Monitoring and Research: Carbon $^{14}\text{CO}_2$ Measurements to Capture the Distribution of Fossil Fuel Emissions (Base Funding: 2 FTE and \$850,000; Program Change: +0 FTE and +\$4,700,000): NOAA requests an increase of \$4,700,000 and 0 FTE for a total of \$5,550,000 and 2 FTE to increase the number of atmospheric samples available for $^{14}\text{CO}_2$ measurements and process them for analysis by accelerator mass spectrometry. NOAA will focus funds towards increasing the capacity of university and agency partnerships with a goal of processing over 5,000 measurements per year by 2014.

Proposed Actions

Measuring $^{14}\text{CO}_2$ will be critical for capturing the general distribution of fossil fuel emissions across the US, and for separating human from natural emissions in an urban environment. As part of an interagency demonstration project to assess the certainty with which atmospheric measurements can identify and verify regional changes in greenhouse gas (GHG) emissions, NOAA will work with universities and DOE's Lawrence Livermore National Laboratory (LLNL) to increase $^{14}\text{CO}_2$ measurements at NOAA sampling sites by a factor of 8 in the next three years. While some of these $^{14}\text{CO}_2$ measurements will be disbursed throughout the network, others will focus in and around an intensified study of emissions from an urban setting (Indianapolis). This leverages NOAA's contributions with those of several universities, NIST, and NSF.

NOAA will use a portion of these funds, working through NOAA's existing Cooperative Institute (CIRES), to purchase an accelerator mass spectrometer (AMS) optimized for $^{14}\text{CO}_2$ measurements, so that it can increase capacity substantially from the current 700 samples per year to 7,000 per year by 2016. To offset the lead-time for ordering and installing the AMS, NOAA will leverage capacity at LLNL and other universities to analyze additional samples. Many samples collected in FY2012 and 2013 will be archived for analysis once the CIRES system is on line. In 2012 and 2013 NOAA will dramatically increase the number of samples extracted and archived for analysis when full capacity is reached. By extracting and archiving samples in the early years, NOAA can ensure a nearly complete record of 5000 measurements from FY2013 forward. Analysis of the archived samples would increase dramatically once the CIRES system is on line and capacity at LLNL increased.

Because these measurements will be made together with measures of 50+ other tracers of GHG emission sectors (e.g., trace gases associated with specific emission activities), NOAA will develop proxy measurements to help identify specific emission sectors. All of these measurements will be interpreted and evaluated through analyses such as NOAA's CarbonTracker, which constrains continental and large regional scale emissions of GHGs from atmospheric measurements.

Statement of Need and Economic Benefits

Knowledge of the future atmospheric burden and impact of GHGs is limited by (1) our understanding of how the global carbon cycle will respond to climate change and (2) our understanding of which GHG management strategies could be most effective in the future. Such information is extremely important for predictions of how rapidly climate will change and for determining the window of opportunity society has to address future climate change. The measurement of $^{14}\text{CO}_2$ is crucial to filling these gaps as it provides the ability to separate human from natural emissions. Without that ability, it will be extremely difficult, if not impossible, to attribute changes in atmospheric CO_2 to specific GHG management strategies.

The 2010 National Research Council report on verifying GHG emissions recommends several courses of action, one of which is to “extend the capability of the CO₂ sampling network to measure atmospheric ¹⁴CO₂”. The report specifically recommends that “NOAA, which maintains the CO₂ sampling network and has the facilities and expertise to collect and process the samples,” work with universities and DOE to implement this increase. Expanding the number of ¹⁴CO₂ measurements as part of the NOAA monitoring network would provide an unambiguous means to differentiate between the CO₂ from fossil-fuel and non-fossil-fuel sources. These measurements would strengthen UNFCCC and EPA inventories of GHG emissions, improve estimates of biospheric uptake and release of carbon, and provide an independent check on GHG management strategies in various regions.

For decades, NOAA has played a leading role in monitoring atmospheric GHGs. As the need for more information about GHG emissions increases, NOAA’s monitoring, modeling and analysis capabilities must include the ability to separate human from natural influences. This point has been recognized by: the U.S. Global Change Research Program (USGCRP); the North American Carbon Program; and the National Research Council of the National Academies.

Addressing climate change and its impacts has become both a national and an international priority. This request is consistent with the Administration’s Science and Technology priority to fund research for measuring, reporting, and verifying GHG emissions. According to the latest IPCC Assessments, global climate change is unequivocal. It is driven by GHGs, mainly anthropogenic release of CO₂, and is posing a major threat to agriculture, marine ecosystems and fisheries, human health, the economy, and national security.

Base Resource Assessment

The base resources for this program are described in the Global Monitoring and Research section of the Climate Research base narrative.

Schedule and Milestones

FY 2012

- Issue grant to purchase an accelerator mass spectrometer (AMS) optimized for carbon-14 measurements. Lead-time from order: ~1.5 years.
- Contract construction of 130 automated air sampling packages (proven design, 12 samples in each package) to create the capacity for taking the additional samples from which CO₂ will be extracted for carbon-14 measurements.
- Increase sample extraction and processing capacity to prepare samples for AMS measurements.

FY 2013

- Measure or archive a total of 4,000 CO₂ extracts per year.
- Increase number of measurements at LLNL by 1,500 samples/year.
- Extract and archive a substantial fraction of the early samples (need to do this before the AMS measurement capability has been expanded to be able to handle the load).

FY 2014

- Measure 3,000 samples/year, and archive the rest for a total of 5,000 per year

FY 2015-2016

- Reduce archive of extracted samples and process samples in real time

Deliverables

- Fully operating accelerator mass spectrometer (AMS)
- Expanded number of measurements of $^{14}\text{CO}_2$ in atmospheric samples at DOE/LLNL
- On-going $^{14}\text{CO}_2$ measurements at 80+ sites
- Comparison of US fossil fuel emission inventory with atmospheric measurements of $^{14}\text{CO}_2$
- Determination of fossil fuel contributions to GHGs in at least one urban “dome” in the US
- Improved emission inventories of numerous GHGs through multi-species analyses

Performance Goals and Measurement Data

Performance Measure: Number of sites supporting frequent $^{14}\text{CO}_2$ measurements	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	18	18	50	80	80	90
Without Increase	18	18	14	14	14	12

Performance Measure: Number of samples extracted for $^{14}\text{CO}_2$ analyses	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	1700	1700	4000	5000	6000	7000
Without Increase	1700	1700	1600	1600	1500	1500

Performance Measure: Number of air samples analyzed by AMS for $^{14}\text{CO}_2$	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	700	700	2000	3000	7000	7000
Without Increase	700	600	600	500	300	300

Description: The three output performance measures above fully capture this capacity-building activity. One measure denotes the increased number of sites and reflects a different set of tasks than those for extraction and actual analysis. The ability to increase the number of collection sites and increase capacity for extracting $^{14}\text{CO}_2$ from air can move more quickly than expanding capacity to accurately measure $^{14}\text{CO}_2$. Nevertheless, by rapidly increasing the number of sites sampled and the extraction capability, NOAA can ensure traceable data records at most sites from FY2013 forward and at all sites from FY2014 forward. With this assurance, NOAA can guarantee the deliverables noted above.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Climate Research Programs
Subactivity: Global Monitoring and Research

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	2,100
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	2,600
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>4,700</u>

Global Monitoring and Research: Carbon Observing and Analysis System (Base Funding: 40 FTE and \$12,905; +7 FTE and +\$8,000,000): NOAA requests an increase of 7 FTE and \$8,000,000 for a total of 47 FTE and \$20,905,000 to complete and sustain an observation and analysis system to determine uptake and emissions of carbon dioxide and greenhouse gases across North America.

Proposed Actions

The CarbonTracker Observing and Analysis System is an observational and analysis network that measures carbon dioxide (CO₂) and other greenhouse gases (GHG), providing observational data necessary for predicting future climate change and ocean acidification and will serve as the backbone of a system for verifying GHG emission reduction and mitigation efforts in North America. The network collects continuous measurements from tall towers, air sampled in flasks, aircraft profiling, and satellite remote sensing, and needs to be expanded to provide the accuracy and precision to quantify the exchange of GHGs between the atmosphere and terrestrial ecosystem and to characterize the regional distribution of GHG emissions and uptake. With this funding, NOAA will:

1. Install and operate 6 new tall towers (for a total of 14 tall towers) to measure CO₂ and other GHGs at several heights in the atmosphere.
2. Increase frequency of flights at 14 existing sites by a factor of four and begin collecting twice-weekly vertical profiles of GHGs with aircraft up to ~8 km height at 10 additional sites across North America to achieve twice-weekly vertical profiles at a total of 24 sites.
3. Improve modeling for NOAA's CarbonTracker tool by including NOAA forecast data and the latest NOAA transport models.
4. Use results from CarbonTracker observations and direct aircraft profiles to compare, verify, and validate CO₂ satellite retrievals.

This effort builds on NOAA's strong observation, modeling, and analysis capabilities; involves coordination with national and international partners; and serves as a structural, operational, and research backbone in a global effort to understand the carbon cycle and verify reduction and offsets of CO₂ and other GHG emissions. Global Monitoring Laboratory will continue to lead this effort and work in coordination with the Cooperative Institute for Research in Environmental Sciences (CIRES), several Federal agencies, the World Meteorological Organization and other international bodies. The Climate Program Office will manage the grants process. This proposal will fund nine Federal positions (7 FTE).

Statement of Need and Economic Benefits

According to the latest IPCC Assessments, global climate change is unequivocal. It is driven by GHGs, mainly anthropogenic release of CO₂, and is posing a major threat to agriculture, human health, the economy, and national security. The rapid increase of CO₂ is essentially the sole cause of global ocean acidification, which is threatening our marine ecosystem and fisheries.

Addressing climate change and its impacts has become both a national and an international priority. Numerous efforts to reduce CO₂ emissions have already begun both around the world and at the state and local levels within the United States. Additionally, the US government has begun processes to federally regulate GHG emissions. The U.S. EPA is preparing to control atmospheric CO₂ as a pollutant using the Clean Air Act (Federal Register (Volume 74, Number 78) Proposed Rule: Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases under the Clean Air Act, April 24, 2009, and reviewing the potential use of the Clean

Water Act for addressing CO₂ in the oceans (i.e. ocean acidification) (Federal Register (Volume 74, Number 71) Notice of data availability: Ocean Acidification and Marine pH Water Quality Criteria, April 15, 2009).

Regulating CO₂, evaluating mitigation strategies and understanding and predicting future climate change and ocean acidification will require an accurate, reliable and independent system for tracking sources and sinks of CO₂ and other GHGs. No emission reduction effort has ever succeeded without ongoing verification (e.g. acid rain and sulfur emission reduction, ozone recovery, and regional air quality policies). NOAA's CarbonTracker program needs to be expanded to reduce the uncertainties in emissions reporting and estimation that challenge our ability to make informed decisions to limit greenhouse gas levels in the atmosphere, certify tradable permits, measure GHG emission offsets, support and verify treaty negotiations, provide accurate inventories of emitters, and implement reliable GHG policies.

Reliable verification can only be made from a widespread observation and analysis system greater than what is currently in place. The current sparse network of observation sites across North America give us only a rough estimate of annual continental fluxes of CO₂, while successful mitigation requires fluxes to be resolved within much smaller regions. Ultimately, satellites will be involved in evaluating GHG emission reduction efforts and changes in global emissions. It will be essential to have a ground based and in situ observational network for testing, improving, and ultimately verifying satellite retrievals.

Historically, NOAA has played a leading role in the monitoring of GHGs. As the need for increased information about GHG emissions increases, NOAA's monitoring, modeling and analysis capabilities must also expand. At its June 2008 Summit, the international Group on Earth Observations (GEO) called for the development of a global observation and analysis system for supporting global mitigation of GHG emission. NOAA's improved CarbonTracker network will provide the core atmospheric observations for the combined U.S. contribution to a global system and ultimately serve as the backbone for a system to verify reduction of CO₂ and other GHG emissions at regional scales.

These increasingly urgent improvements cannot be made without additional resources or without compromising other parts of NOAA's critical long-term global monitoring network.

Schedule & Milestones

FY 2012 – 4 sites (1 tall tower & 3 aircraft) installed; begin or continue satellite retrieval comparisons and validations (e.g., GOSAT, AIRS, IASI, OCO-2)

FY 2013 – 4 sites (1 tall tower & 3 aircraft) installed; new lab instrumentation operational; CarbonTracker assimilations to include NOAA transport data along with European data

FY 2014 – 4 sites (2 tall tower & 2 aircraft) installed; Extensive QA/QC and Data management enhancement verified & operational

FY 2015 – 4 sites (2 tall tower & 2 aircraft) installed; Regional Flux Estimates Defined

FY 2016 – Seasonal Estimating Capability in place

Deliverables

- 14 fully operational tall towers (12 NOAA tall towers plus 2 collaborative tall towers), measuring greenhouse gases continuously across North America

- 48 sets of aircraft vertical profiles of ~50 greenhouse gases and tracers across North America each week
- CarbonTracker operating with both NOAA's and European (ECMWF) global meteorology to produce sustained monthly outputs
- Satellite retrieval verification capability in place

Performance Goals and Measurement Data

Performance Measure: Reduce Uncertainty of the North American Carbon Sink (million tons C/y) Measure 16b.	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	400	380	350	300	<300	<<300
Without Increase	400	400	500	500	550	550

PROGRAM CHANGE PERSONNAL DETAIL

Activity: Climate Research Programs
 Subactivity: Global Monitoring and Research

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Physical Scientist	Boulder, CO	ZP IV	7	87,815	614,705
IT Specialist	Boulder, CO	ZP III	2	61,612	123,224
Total			<u>9</u>		<u>737,929</u>
less Lapse		25%	<u>2</u>		<u>184,482</u>
Total full-time permanent (FTE)			7		553,447
2011 Pay Adjustment (0%)					0
2012 Pay Adjustment (0%)					0
TOTAL					<u>553,447</u>

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	7
Other than full-time permanent	<u>0</u>
Total	7

Authorized Positions:

Full-time permanent	9
Other than full-time permanent	<u>0</u>
Total	9

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Climate Research Programs
Subactivity: Global Monitoring and Research

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$553
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>553</u>
12 Civilian personnel benefits	128
13 Benefits for former personnel	0
21 Travel and transportation of persons	33
22 Transportation of things	5
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	1,090
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	4,169
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	2,022
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>8,000</u>

Competitive Research Program: International Research Institute (Base Funding: 0 FTE and \$9,036,000; Program Change: -0 FTE and -\$6,060,000: NOAA requests a decrease of \$6,060,000 and 0 FTE for a total of 0 FTE and \$2,976,000 for the International Research Institute. For fifteen years, NOAA has used these funds to support international activities via a competitive grant to Columbia University's International Research Institute (IRI) for Climate and Society. IRI predicts regional impacts of a changing climate outside the United States and demonstrates the utility of this information in decision making, especially in developing countries. With the emergence of NOAA climate services, the agency has recognized the need to review its international portfolio and restructure its international engagement in order to enable NOAA to be responsive to the increasing number of requests from bilateral partners and multilateral processes within the shifting landscape of societal demands, especially domestically. As such, sufficient funds are provided within the FY 2012 CS request for a restructured international portfolio, and to support competitive research grants to develop NOAA's role in the Emerging Global Framework for Climate Services.

Performance Measure: Increased number of real-time, experimental forecasts for effective international laws, policies, strategies, and incentives for climate adaptation	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Without Decrease:	12	12	12	12	12	12
With Decrease:	N/A	4	4	4	4	4
Description: NOAA's competitive research program seeks to enhance society's capability to understand, anticipate and manage the impacts of climate in order to improve human welfare and the environment, including developing countries. Forecasts from this program provide a range of current climate prediction information, including global probability forecasts for seasonal temperature and precipitation, the predictions of the individual tools that contribute to the final forecasts, and forecasts of the sea surface temperature, including specifically the ENSO state that strongly influences climate forecasts. The final forecasts are expressed in probabilistic terms (because of their considerable uncertainty), which can be useful information for agricultural, hydrological, public health and food security planning purposes.						

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Climate Research Programs
Subactivity: Competitive Research Program

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	-6,060
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>-6,060</u>

Chemical Sciences: Chemistry Climate Research (Base Program 0 FTE and \$0; -0 FTE and - \$2,200,000): NOAA requests a decrease of \$2,200,000 and 0 FTE for chemical climate research for a total of 0 FTE and \$0. In the Consolidated Appropriations Act, 2010, Congress provided additional funds for chemical climate research. With these additional funds, NOAA, conducted research which provided fundamental information on the chemical processes that contribute to climate change. The research conducted under this program was focused on using atmospheric observations to evaluate and improve atmospheric emission inventories for climate forcing agents and their precursors; information that was needed by decision makers to evaluate climate change adaptation and mitigation strategies. Atmospheric observations and process modeling were also used within this program to improve understanding of the chemical processes that influence the atmospheric abundances of climate forcing agents (greenhouse gases, aerosols, etc.). This information contributed directly to NOAA's efforts to improve the predictive capability of climate models and provided needed information for federal and regional decision makers as well as industry stakeholders. Additional funds are not required in FY 2012 as requested funding provides for sufficient research to understand and quantify the chemical processes responsible for the changes and transformations in the atmosphere related to climate, the stratosphere, and air quality.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Climate Research Programs
Subactivity: Chemical Sciences

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	-30
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	-100
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	-150
31 Equipment	-300
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	-1,620
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>-2,200</u>

APPROPRIATION: OPERATIONS, RESEARCH, AND FACILITIES

SUBACTIVITY: INTEGRATED CLIMATE SERVICES

The objectives of the Integrated Climate Services subactivity are:

- Support regional decision making with timely and authoritative climate products and information;
- Improve the Nation's capacity to manage drought-related risks through regionally relevant drought information system products and services;
- Develop, deliver, and apply information on time and space scales relevant to decision-making through a sustained interactive dialogue involving NOAA, partners, and stakeholders to understand information needs and information planning; and
- Develop an assessment services framework for facilitating better connectivity of high resolution data with decision processes and models.
- Improve public climate science literacy and raise public awareness, understanding of, and engagement with NOAA's climate science and services programs

Societal concern about the impacts of climate change is growing. Citizens in public and private sectors want easy access to credible climate science information to help them make informed decisions affecting their lives and livelihoods. Weather and climate influences almost every sector of society, and affects up to 40 percent of the United States' \$10 trillion annual economy. (NRC report, 2003 entitled "Satellite Observations of the Earth's Environment: Accelerating the Transition of Research to Operations"). As the leading provider of climate, weather, and water information to the nation and the world, NOAA is a logical source for citizens to turn to for climate information. The Integrated Climate Services Program represents the primary service delivery outlet for the Climate Service, providing sustained services directly to climate-sensitive sectors and stakeholders, to inform better decision making for adaptation and mitigation in the face of future climate-related uncertainties. Because climate impacts are being felt across all regions in the U.S., affecting almost every sector of society, increasing the capacity of NOAA's and its partners' professionals to use climate products and services, particularly at the regional and sub-regional levels, is essential to NOAA's mission. NOAA must also expand and improve the way it communicates, educates, outreaches to, and engages with public stakeholders to better meet the nation's needs for timely, authoritative and understandable climate data and information.

NOAA is targeting the initial suite of climate services in four areas: 1) deploying a National Integrated Drought Information System, 2) initiating a Regional Climate Services Enterprise, 3) sustained Assessment Services, and 4) Communication and Education.

NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM (NIDIS)

The goal of the NIDIS Act of 2006 (Public Law 109-430) is to improve the nation's capacity to proactively manage drought-related risks by providing those affected with the best available information and tools to assess the potential impacts of drought, and to better prepare for and mitigate the effects of drought. Drought is a slow-onset natural phenomenon that is often called "the creeping disaster." Unlike other natural hazards such as hurricanes, floods, and tornadoes, the gradual nature of drought hinders the recognition of the true extent of impacts as they filter through the economy and environment. The National Integrated Drought Information System

(NIDIS) will enable users to determine the risks associated with drought and provide supporting data and tools to inform drought mitigation. (NIDIS Implementation Plan, June 2007). The development of the NIDIS is happening through a coordinated, multi-faceted program of 1) research, 2) observations, 3) forecast improvements, 4) drought early warning systems and 5) a portal to provide access to drought related data and information.

Coping with Drought Research

In FY 2007, NOAA began sponsoring integrated, problem-focused research and research-to-operations transition projects addressing the effects of drought on society and economically productive sectors of the US economy and the expressed needs of regional decision makers as they confront the challenges of drought planning, mitigation and efforts to incorporate climate variability over years to decades into their planning processes. Structured feedback from this research, as well as a defined mechanism for incorporating drought research into operational climate services, are expected to result in more widespread use of climate information and will be critical to building an end to end climate service.

This investment is implemented through the Climate and Societal Interactions (CSI) Program, and draws on collaborations from other parts of NOAA, such as NWS and NESS. Specifically, the initiative: (1) provides the resources for a CSI Regions Drought Initiative to build upon and highlight the experience gained throughout the RISA network of researcher-practitioner collaborations over the last 5+ years of the severe, sustained drought in the western US; (2) identifies, via a sector-based impacts research effort, the economic and social effects of drought (across and outside the US) through methods compatible with the short and long-term data and information needs of policy and decision makers; and (3) meets user requirements for the development of end-stage climate information tailored for specific decision needs associated with operational activities. This provides resources to respond to the challenges of such practical issues as the re-licensing of dams, reservoir management challenges, ecosystem restoration initiatives, and a host of other complex and competing water-resource allocation issues.

Observations—Soil Moisture Sensors

As part of the NIDIS program, NOAA has begun equipping 114 ground based U.S. Climate Reference Network (USCRN) observing stations in the Contiguous U.S. with soil moisture and temperature, and relative humidity (RH) sensors for drought monitoring purposes, which is particularly important for a number of climate sectors including agribusiness. The installation of these soil and RH sensors to existing observational monitoring climate networks was required to turn long-term climatology into information useful to agricultural and other drought risk-sensitive business sectors. Observations from this suite of soil and RH sensors help drought experts accurately analyze drought conditions in the U.S. Drought Monitor, and help with forecasts related to agricultural and water management operational plans and longer term future annual, inter-annual, and even decadal policies. Plans for the possibility of equipping USCRN sites in Alaska (as that network develops) are still in development.

Improving Climate Forecasts

As part of the NIDIS program, NOAA is improving two critical elements of NOAA climate forecast operations and services: (a) improving NOAA's operational intraseasonal to seasonal drought and climate forecast capability by utilizing ensembles of multiple state-of-the-art coupled climate models to better quantify forecast uncertainties and reduce forecast errors, and (b) increasing the scope and applicability of NOAA's operational climate forecasts by developing new and improved drought forecast products to meet the needs of decision makers. These

model and forecast improvements will enable businesses, academia, and government agencies to minimize the impacts of drought.

The delivery of enhanced drought information products for risk management is a critical component of the Drought Early Warning Systems (DEWS). The DEWS includes 1) a real-time drought monitoring system based on National Centers for Environmental Prediction (NCEP) operational global and regional analyses of atmosphere, ocean, and land surface conditions, 2) a state-of-the-art seasonal drought forecasting system based in part on the next generation NCEP fully coupled Climate Forecast System, and 3) an interactive drought information delivery system for drought monitoring and prediction products including an internet portal for forecasts, data, GIS products, etc. The latter will be a collaborative effort with the Climate Prediction Center (CPC) and the National Drought Mitigation Center to provide real-time drought monitoring and forecast products and develop interactive drought maps. These efforts will directly support the development of next generation U.S. Drought Monitor and U.S. Seasonal Drought Outlook products, while contributing to improvements in the skill of the official U.S. 6-10 day, 8-14 day, monthly and seasonal precipitation and temperature forecast products.

Drought Portal

NOAA maintains the U.S. Drought Portal as the public face of NIDIS. Its goal is to improve the access and sharing of drought related data and information among all users regionally, locally, and nationally and can be found at <http://www.drought.gov>. This system, along with coordinating national drought monitoring and forecasting systems and improving drought preparedness and planning, was authorized in P.L. 109-430, the National Integrated Drought Information System Act of 2006. The U.S. Drought Portal is part of the interactive system to:

- Provide early warning about emerging and anticipated droughts
- Assimilate and quality control data about droughts and models
- Provide information about risk and impact of droughts to different agencies and stakeholders
- Provide information about past droughts for comparison and to understand current conditions
- Explain how to plan for and manage the impacts of droughts
- Provide a forum for different stakeholders to discuss drought-related issues

The U.S. Drought Portal also serves the international community by providing a home for coordination of North American drought monitoring activities and by working with the World Meteorological Organization and the Group on Earth Observations to contribute to, or provide, a global drought monitoring portal.

Drought Early Warning Systems

NOAA has begun developing three early warning systems in the Colorado River Basin, the Southeastern U.S., and California to prototype various approaches for developing early warning and information for proactive drought risk reduction in different water, energy, agricultural, ecosystem management and drought conditions at different geographical resolutions. These diverse areas will generate test cases for the transferability of early warning concepts and products. In addition, the early warning systems will facilitate and enhance the transition of research advances in drought monitoring and prediction and lead to improved NOAA climate forecast products and will result in the development of the first NIDIS early warning systems, a direct implementation requirement of the NIDIS Act of 2006. Specifically, this initiative will

develop Drought Early Warning System prototypes and operational activities that:

- Support and improve drought warning sources at the Federal, state, tribal, and local levels and assess their status and effectiveness;
- Facilitate proactive decisions aimed at minimizing the economic, social and ecosystem losses associated with drought;
- Enable state- and county-level managers to provide more effective public warnings with drought risk indicators, and provide the capacity to develop triggers for decisions;
- Increase coordination and design of effective drought early warning and information systems that mitigate drought-related risks and are transferable to other regions within the U.S.;
- Develop a regional-scale drought information clearinghouse for drought information and risk management practices at a variety of spatial scales (e.g. watershed, state, county) using the drought portal, and facilitate the diffusion of such innovations to other locations.

REGIONAL SERVICES

As part of NOAA's focused investment in the development of an integrated climate services program in FY 2010, NOAA began a transition from a suite of individual climate applications and service programs (e.g., RISAs, RCCs, NWS, National Climatic Data Center, Sea Grant Extension Network, and Coastal Services Center) to an integrated Regional Climate Services Enterprise (Enterprise). As part of an integrated network, the Enterprise will more effectively coordinate the deployment of programs and services in each region. Existing resources will be leveraged to ensure efficiency while enhancing their responsiveness regionally to emerging stakeholder needs and expediting their transition from research to operations and services.

In FY 2010, NOAA established six regional climate directors. These directors will leverage key partners as well as others that contribute program resources toward advancing NOAA's regional climate services. The regional climate directors coordinate climate activities across all of NOAA in each of the six weather service regions. NOAA already has extensive regional climate capabilities and partners with other external groups, and coordinating and enhancing those will be one of the most important outcomes of establishing a Climate Service at NOAA. NOAA regional climate directors are responsible for:

1. Providing leadership in the development of an integrated NOAA program of climate services on a regional scale that responds to the needs of stakeholders and draws upon agency-wide assets and capabilities.
2. Managing the development and execution of a Regional Climate Services Strategic Plan that combines the unique assets and special capabilities of NOAA programs working with regional partners in other Federal agencies, state, local and tribal governments, universities, the private sector and NGOs.

The Regional Climate Service Directors are working with Enterprise partners (e.g. RISAs, Sea Grant, NWS climate focal points, etc.) to develop and deliver operational climate services and products in their region, and to forge and sustain close working relationships with stakeholders. The Pacific Climate Information System (PaCIS) team serves as a prototype for how regional climate services management structure should be organized.

ASSESSMENT SERVICES

The Global Change Research Act of 1990 (GCRA) calls for the President (through a Federal interagency body) to prepare and submit to the Congress, on a periodic basis (not less frequently than every 4 years), an assessment which: 1) integrates, evaluates, and interprets the findings of the Federal interagency research effort and discusses the scientific uncertainties associated with such findings; 2) analyzes the effects of global change on the natural environment, agriculture, energy production and use, land and water resources, transportation, human health and welfare, human social systems, and biological diversity; and 3) analyzes current trends in global change, both human-induced and natural, and projects major trends for the subsequent 25 to 100 years. The next National Assessment is due in 2013. The demand for climate information at regional to local scales for decision making requires increased resolution of the Nation's mandated assessment product.

NOAA is building permanent capacity for regional climate assessment services, initiated with \$9,000,000 provided in the Consolidated Appropriations Act, 2010. This assessment services capability will serve as a cornerstone of NOAA's climate services. NOAA will help staff interagency efforts for directing national assessment activities, and support a Federal Advisory Committee, and support: 1) coordinated regional climate information and access, including working with other agencies in the development of climate impact indices, and beginning to build a framework for comparing and using regional projections, and 2) conduct regional assessments through regional working groups and to build/sustain regional networks. Continuing our efforts to streamline and establish the most efficient use of resources for the national assessment, NOAA will use up to \$5 million to support a central assessments office. This office will ensure there is appropriate coordination across federal agencies and with USGCRP. In addition, NOAA will provide 1) centralized regional downscaling expertise and coordination, 2) overall coordination, a technical and scientific support unit for provision of scientific and graphical expertise, web-based data accessibility, stewardship, and visualization for observations and model output, communication expertise, and other scientific and technical support for regional assessments as well as support for GCRP-led sectoral assessments.

These assessment services augment existing regional and sectoral focal points across the agency and with our Federal and non-Federal partners (states, academia, user communities, etc) to begin to integrate, evaluate and interpret climate change related observations, models and projections, and evaluate the effects of climate variability and change for approximately 10 regions and 1 sector (oceans/marine resources) covering the United States and coastal waters. In addition, NOAA will begin to develop a framework for consistent approaches and application of regional projection efforts to support regional decision making, including facilitating better connectivity of high resolution data with decision processes and models. NOAA will also play a supporting role in a USGCRP-led effort, undertaken through other agencies, to assess sectoral climate impacts (e.g. energy, transportation, health, etc.).

COMMUNICATIONS AND EDUCATION

The Climate Service conducts a Communication and Education Program (CommEd) that has missions to improve public climate science literacy, and to raise public awareness, understanding of, and engagement with NOAA's climate science and services programs. A goal is to provide timely access to authoritative climate data and information services that people need to help them make informed decisions in their lives, businesses, and communities. CommEd's work is conducted in close alignment with the agency's overarching Strategic Plans for Communications, Education, and Engagement. The CommEd Program helps lead the U.S. Global Change Research Program's (USGCRP) interagency effort to develop climate education

strategies that are aligned with national education standards. The CommEd Program employs a three-pronged strategy to promoting climate science literacy among its publics: (1) publication of content in the NOAA Climate Services Web Portal (www.climate.gov), (2) direct dialogs with a variety of audiences in live, interactive events such as educator professional development workshops and community conversations on climate hosted in science centers, and (3) internal communications and capacity building to ensure that NOAA’s various communications personnel and extension networks (such as Sea Grant, NWS extension agents, and Regional Climate Centers) have the understanding and information resources needed for outreach to public stakeholders on local and regional scales.

NOAA Climate Services Portal

The CommEd team works as a core part of a larger, NOAA-wide effort to manage and maintain the Climate Services’s (CS) Portal Prototype. The CS Portal Prototype demonstrates how a single, online point of access to the agency’s and its partners’ climate data, information resources and educational products could be developed and expanded to serve all of NOAA and the USGCRP. The Portal features customized interfaces for five distinct audiences: (1) Decision makers and policy leaders, (2) Data and services users (scientists, resource managers, business professionals, etc.), (3) Public media (working in concert with the Office of Communications), (4) Educators (both formal and informal), and (5) the climate-interested public, The CS Portal delivers climate science content that is free, readily accessible, and easily understandable—all in flexible formats that maximize utility.

Deliverables

NIDIS

- Monitoring gaps analysis, Improvements in monitoring (e.g. streamflow and snow), Spatial analysis of water demand for the Pilot basins.
- Development and improvement of drought indicators and indices. For example, the NRCS update to the Surface Water Supply Index (SWSI), Improve and utilize low flow impacts database, Custom drought index server, Water demand projections and revised triggering criteria (threshold for making management decisions).
- Develop state, Federal, tribal and private partnerships through workshops to sustain early warning systems after the pilot stage, including development of drought coordinator capacities (NIDIS Implementation Plan, 2007). For example, develop communities through the Drought Portal that can develop drought early warning processes and can provide input to the Drought Monitor.

NIDIS Milestones	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Number of regions with new or improved drought early warning systems	3	4	5	6	6	6
Number of soil moisture sensors reporting in real-time	100	114	114	114	114	114
Number of interoperable drought systems accessible through the US Drought Portal	16	20	24	28	32	36

Number of drought products developed and available	11	14	17	20	22	25
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Regional Climate Services Enterprise

- FY 2012: Establishment of a multi-partner Regional Climate Service Enterprise network
- FY 2012: Initial customer engagement and dialogue opportunities to enhance understanding of climate vulnerability and information needs in the region
- FY 2012: Completion of an initial regional climate services Action Plan
- FY 2012: Meaningful performance metrics and mechanisms to evaluate program development and evolution at the regional level
- FY 2012: Definition of and support for regional dimensions of issue-focused information services including drought/water (NIDIS), sea level rise/coastal inundation, marine and coastal ecosystems and resources focusing on providing customers with information on historic context, current conditions and future projections;
- FY 2012/13: Development of a regional component of the Climate Service portal
- FY 2012/13: A joint plan with Department of Interior emerging Regional Climate Science Centers in the context of collaboration in climate science, services, adaptation, mitigation, education and communication

Assessment Services

- FY 2011/12: Suite of workshop reports and guidebooks including an evaluation of appropriate data access and management to support assessments, draft recommendations for regional-scale projection comparison and use, and assessing integrated monitoring systems to support assessments.
- FY 2012/13: Produce regional scale projections of key climate variables for the United States.
- FY 2012/13: First reviewable draft of approximately 10 regional assessments and one sectoral assessment.
- FY 2013: Completion of 10 regional assessments and one sectoral assessment. First reviewable draft of the National Climate Assessment. First reviewable draft of report on evaluation of assessments practices and usability

Communication and Education

- FY 2011/12: Conduct user testing of the Climate Services (CS) Portal interfaces to establish a durable baseline measurement against which we can measure progress annually thereafter
- FY 2012: Deliver educator professional development distance learning modules on climate literacy with a primary focus on adaptation
- FY 2012: Courses, workshops, and training on climate science and adaptation offered for NOAA staff and the international community

**Performance Goals and Measurement Data
NIDIS**

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Number of regions with new or improved drought early warning systems	3	4	5	6	6	6
<p>Description: NOAA has a goal of establishing, in eight regions, new or improved drought early warning systems (DEWS) that will reduce drought impact risk and enable regions to prepare for and address drought impacts. The regions will incorporate NIDIS information products and services including improved drought preparedness plans and adopting prototype Drought “Early Warning Systems”.</p>						

Regional Climate Services

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Percentage of new regional products and services provided and used by the public, private sector, and decision support communities for climate related decisions (cumulative per year) (contingent upon new resources in FY 2012)	0	30%	33%	38%	42%	45%
<p>Description: This measure shows the number of new products and services either developed or integrated/expanded to provide users with access to the climate information, products, and services, as well as tools to use for decision-making or management systems in resource management (e.g., water, coastal, ocean, forest, and/or wildlife management).</p>						

Assessment Services

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Number of climate-change related impact, vulnerability, adaptation, or mitigation information topics addressed in the Assessments	7	12	12	25	25	25
<p>Description: This performance measure will demonstrate the role of formal climate change assessments in decisions to address climate change impacts by identifying the number of topics addressed in the assessments that are considered by business, government, or the public that affected decisions related to improved climate resilience. Information topics are based on the U.S. GCRP report, “Global Climate Change Impacts in the U.S.” This measure will track the extent to which the USGCRP topical information items are used by industry, etc., to inform their key decisions on how to mitigate or adapt to climate change.</p>						

Communication and Education

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Percentage improvement in the Quality of Relationship with users in the delivery and communication of climate information and services (Quality of relationship is a formal method of measuring indicators like trust, satisfaction and reliability), Measure 16f	0	0%	10%	15%	20%	25%

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Program Changes for FY 2012:

Regional Services: Regional Climate Services (Base Funding: 6 FTE and \$4,888,000; Program Change +0 FTE and -\$461,000): NOAA requests a decrease of 0 FTE and \$461,000 for a total of 6 FTE and \$4,427,000. This decrease reduces Congressionally provided funds for Regional Climate Centers (RCCs), however, due to the high priority the Administration is placing on regional climate services, NOAA retains 6 FTE and \$3,000,000 in appropriated funds to provide regionally-tailored climate products and service delivery for a sustained, integrated regional climate services enterprise in six U.S. regions. With the requested funding level, NOAA will be able to continue to focus and align the six RCCs within the regions, allowing for further definition of regional climate service requirements.

Proposed Actions

This request provides support for the Regional Climate Centers (RCCs) as critical partners in NOAA's Regional Climate Services program. The RCCs work will be coordinated with the six Regional Climate Service Directors hired by NOAA in 2010 to lead an integrated program of regional climate services. The Regional Climate Centers will be aligned to coincide with the six NOAA Climate Service Regions and be managed by the newly hired Regional Climate Service Directors to ensure full integration as core components of NOAA's regional climate services partnership. The Regional Climate Services focus is defining climate service requirements, feeding that back into NOAA's core research infrastructure, and translation efforts of emerging research for more accessible and consistent experimental application within each of the regions. Each center will serve as the trans-boundary experts working to identify stakeholder needs and match these needs with the emerging science developed through Climate Service core capabilities with its existing laboratories, centers, and grantees. Initial sectors targeted will include: water resources (including drought), sea level rise and coasts, and living marine resources. Recent and ongoing regional climate assessment and services programs have helped inform this selection of initial priorities. Additional details on approach and priorities can be found in a CS regional services strategic vision and framework document and associated baseline assessment of regional climate information needs and capabilities being developed as part of the CS proposal.

Sub-Regional Climate Services Infrastructure and Engagement: These resources will enable NOAA to continue to support the Regional Climate Centers (RCCs), which have over 20 years of experience in regional climate observations, data management, applications research, customer support, and partnership as part of NOAA's three-tiered national, regional, and state climate collaboration. The merit-based competitively selected RCCs will ensure effective provision of services, including;

- Weekly input to the *U.S. Drought Monitor* & other contributions to NIDIS;
- Operation of specialized *climate data tools*: *Datzilla*, a NOAA reporting and tracking system for observational errors; and *Weather Coder3*, an operational National Weather Service system to collect and process thousands of daily observations through the Applied Climate Information System (ACIS).
- Contributions to the development of the *NOAA Climate Services Portal*;
- Support *State of the Climate* reports by providing monthly summaries of regional climate anomalies to NCDC;
- Acting as a *regional hub* for State Climatologists for climate information (e.g., support state adaptation programs);

- Supporting *applied climate research* and *service development* programs to support NOAA and other federal agencies (e.g., USDA, Department of the Interior [NPS, BLM], and the Department of Homeland Security);

NOAA's Regional Climate Services program will continue and enhance vital RCC contributions to CS including the Applied Climate Information System (ACIS) and other Enterprise systems to support data service needs of stakeholders at state, local, and tribal levels. Such support includes: climate perspectives and monitoring product delivery, sector-specific engagement, applied climate collaboration on research to applications/applications to operations efforts (including promotion of observational network vitality), and coordination on sub-regional assessment and related impacts reporting. Additionally, the Regional Climate Services will provide hands-on training and technical support for existing CS products and services as well as supporting climate adaptation outreach and services work of sub-regional partners such as State Climatologists, Sea Grant Extension Network, USDA Extension, and NWS climate program managers.

Statement of Need and Economic Benefits

The work at the RCC's supports the Department's Balanced Scorecard Goal, "Promote economically-sound environmental stewardship and science and help drive growth of blue and green businesses" and its objective to "Support climate adaptation and mitigation." The request contributes directly to the objectives of the proposed Climate Service (CS) as announced by Secretary Locke on February 8, 2010. It also facilitates an integrated and comprehensive structure to support NOAA's co-chair role in the Administration's Interagency Climate Change Adaptation Task Force. Regional climate sciences and services through this initiative will provide critical inputs to the Task Force as it works toward the development of a national adaptation strategy, resulting in more resilient and more aware communities and opportunities for greater collaboration both inside and outside government.

Both the Administration and Congress identify delivery of best-available climate science to decision-makers as a national priority. Congress (via the American Clean Energy and Security Act of 2009) and the NRC highlight the importance of regional-scale services delivery, since most adaptation decisions (e.g., resource management, infrastructure, energy services) are made at local, state, and regional levels. Informing decision-making in sectors and regions sensitive to climate change requires reliable, authoritative scientific information and discussion support services. As part of NOAA's focused investment in the development of an integrated climate services program in FY 2010, NOAA began a transition from a suite of individual climate applications and service programs (e.g., RISAs, RCCs, NWS, National Climatic Data Center, Sea Grant Extension Network, Coastal Services Center) to an integrated Regional Climate Services Enterprise. The aforementioned individual programs have made progress in meeting stakeholder needs in the areas they serve. However, these efforts were not integrated such that proven products and services and best practices were readily shared within and among regions, and many regions and sectors remained underserved. Existing resources will be leveraged to ensure efficiency while enhancing their responsiveness regionally to emerging stakeholder needs and expediting their transition from research to operations and services. Such coordination reduces duplication and enhances user access to and trust in NOAA's products and services and inform better decision-making for adaptation and mitigation in the face of future climate-related uncertainties. Because climate impacts are being felt across all regions in the U.S., affecting almost every sector of society, increasing the capacity of NOAA's and its partners' professionals to use climate products and services, particularly at the regional and

sub-regional levels, is essential to NOAA’s mission. The following examples demonstrate the economic benefit to the Nation of investing in climate products and information services outlined in this proposal:

- NOAA drought forecast information was estimated to have an economic impact of between \$100 and \$350 million in the State of Georgia alone in terms of mitigated agricultural losses during a state-declared drought year;
- Coastal states account for roughly 80 percent of U.S. wages and GDP with shoreline adjacent counties subject to sea level rise, coastal inundation and other climate-related hazards account for 40% of the wages and GDP; and
- In 2005, the Multihazard Mitigation Council estimated that a \$1 investment in mitigating the impacts of natural disasters saves society an average of \$4 with positive cost-benefit ratios for mitigation activities related to flooding and wind damage from severe storms, tornadoes, hurricanes and other climate-related extreme events.

Base Resource Assessment

The base resources for this activity are described in the Regional Services base narrative.

Schedule and Milestones

- FY 2012 Develop Regional Climate Services Action Plan for all 6 regional networks, incorporating other federal agencies where applicable, including plans to get user feedback to evaluate services
- FY 2012-16 Establish and implement a continuous process for characterizing regional customer/partner requirements, starting with an initial baseline assessment of needs for products, services, tools, and capacity building.
- FY 2012-16 Develop and implement a continuous system for conducting product and service delivery to the customers/partners of the climate service network.
- FY 2012-16 Establish a regionally based process for new product and service development and transition, focusing on closing high priority research gaps, and transitioning science to applications through active engagement with academic, private, and federal research sectors in the regions.

Deliverables

- Integrated tools and outreach that enhance risk management strategies for decision makers, such as GIS-enabled NOAA climate data products focused initially on Sea-level rise and water management.
- Competency-building training sessions for professional development to enhance use of regionally- or sectorally-relevant climate products/services; include rigorous feedback mechanisms (e.g., user evaluations, surveys).
- Updated regional contributions to the Climate Services Portal.

Output:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Numbers of customer requirements activities conducted	0	6	9	11	11	11

Numbers of products or tools developed	0	2	5	7	9	16
With Increase	0	8	14	18	20	27
Without Increase	0	0	0	0	0	0

Performance Goals and Measurement Data

Performance Measure: New regional products and services provided and used by the public, private sector, and decision support communities for climate related decisions (cumulative per year)	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
	Target	Target	Target	Target	Target	Target
With Increase	0	6	7	8	9	10
Without Increase*	0	0	0	0	0	0
Description: Measures the number of new regional products and services provided and used by the public, private sector, and decision support communities for climate related decisions (cumulative per year)						

*The baseline for this measure is based upon the current GPRA: Number of Regionally focused climate impacts and adaptation studies communicated to decision makers. During the first year of implementation, the baseline will be recalculated for this measure.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Integrated Climate Services
Subactivity: Regional Services

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	-461
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>-461</u>

Assessment Services: Assessment Services (Base Funding: 0 FTE and \$9,000,000; +3 FTE and +\$1,000,000): NOAA requests an increase of 3 FTE and \$1,000,000 for a total of 3 FTE and \$10,000,000 to support a permanent capability to produce climate assessments at national and regional scales. In particular, this increase will provide staff support and support for regional modeling activities and scenario development for the National Climate Assessment.

Proposed Actions

As part of a sustained assessment process that will provide a critical underpinning of the Climate Service, NOAA requests funding for key positions to lead the National Assessment, and provide Regional and Sectoral leadership and coordination. In addition, NOAA requests additional support for regional modeling activities and scenario development for the National Climate Assessment, particularly. This investment is necessary so that projections and predictions at regional scales become more coherent from region-to-region, and are well-described, relevant, and improved. The assessment effort will provide critical evaluation of regional modeling (or ‘downscaling’) and a vehicle for contextual access to regional projections. However, this investment will only begin such an effort and will focus primarily on providing some standards for comparison and evaluation of regional projections targeted at non-scientific users and on providing clear and usable access to model results and data. It will build on existing assessment efforts and on allied efforts in the Agency (National Climate Model Portal, and MAPP program).

Statement of Need and Economic Benefits

The Global Change Research Act of 1990 (GCRA) calls for the President (through a Federal interagency body) to prepare and submit to the Congress, on a periodic basis (not less frequently than every 4 years), an assessment which: 1) integrates, evaluates, and interprets the findings of the Federal interagency research effort and discusses the scientific uncertainties associated with such findings; 2) analyzes the effects of global change on the natural environment, agriculture, energy production and use, land and water resources, transportation, human health and welfare, human social systems, and biological diversity; and 3) analyzes current trends in global change, both human-induced and natural, and projects major trends for the subsequent 25 to 100 years. The last two of these assessments have been completed under existing NOAA scientific leadership. (The next National Assessment is due in 2013).

Understanding and characterizing the nation’s vulnerability to climate change and its adaptive capacity to reduce that vulnerability is not only essential for informed, near-term decisions regarding government actions to promote adaptation to committed warming (i.e., unavoidable warming that will occur due to historic emissions of greenhouse gases) but is also an essential input to decisions regarding how aggressively to reduce greenhouse emissions. Regional and national assessments will meet an increasing range of demands for climate change decision support across the Nation. Building on the past two decades of experience, and pairing existing expertise with emerging capacity, NOAA will support a collaborative, participatory assessment process that engages scientists, government officials, businesses, and communities in the investigation of climate impacts and effective mitigation and adaptation. This evolving program of shared learning and joint problem solving will serve as a foundational component of NOAA climate services.

Assessment processes are a proven way to conduct effective dialogue between users and producers of climate change information, as well as to enhance integration among involved

experts of diverse backgrounds spanning academia, government, and private industry; thus assessments support the constructive expert and user-provider partnerships needed for a national climate change enterprise. Assessments provide the critical connection between the research and the development of tools and products that decision makers can apply; they are also critical in communication and education efforts to improve understanding of climate variability and change and its impacts. International scientific and technical assessments by the Intergovernmental Panel on Climate Change provide key inputs to multi-national negotiations, and U.S. scientific participation supports sound, up-to-date information for policy-makers.

Cumulatively, the assessments will contribute to ongoing efforts to understand what climate change means for the United States and what services are necessary to allow for informed decision-making. These assessments will be tied to outreach and education efforts that inform Americans about climate change and its impacts and provide scientific support for end users. This information will provide an objective basis for adaptation and mitigation strategies at a variety of temporal and spatial scales. These assessments will also contribute to the legislatively mandated National Climate Assessment and future international assessments, including those of the Intergovernmental Panel on Climate Change.

Climate assessment services will involve both operational and research elements of NOAA, and will build upon many existing NOAA resources and functions including research in the physical, biological, and social sciences, observing, data management, modeling and forecasting, education and outreach. NOAA will also enhance its capabilities and tailor its products through partnerships with other Federal agencies, and the academic, public and private sectors.

Schedule & Milestones

FY 2012 Conduct regional need analysis and release prototype website for the comparison of regional projections and integrate into the full Assessments website

FY 2013 Fully implement web-based resource for the comparison of regional projections & Begin to use CMIP 5 results to provide new regional projections in a comparative framework

FY 2014 Expand the number of variables and scenarios used in the regional projections

FY 2015 Conduct regional needs analysis to evaluate website and determine future needs for stakeholders

Deliverables

- Web-based resource for the comparison of regional projections and guidance for application of regional projections
- Begin to use CMIP 5 projections to provide new regional projections
- Expand the number of variables used in the regional projections

Performance Goals and Measurement Data

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Number of climate-change related impact, vulnerability, adaptation, or mitigation information topics addressed in the Assessments	Target	Target	Target	Target	Target	Target
With Increase	0	7	12	12	25	25
Without Increase	0	0	0	0	0	0
Description: This performance measure will demonstrate the role of formal climate change assessments in decisions to address climate change impacts by identifying the number of topics addressed in the assessments that are considered by business, government, or the public that affected decisions related to improved climate resilience. Priority topics will be determined by the interaction with stakeholders over the course of 2011						

PROGRAM CHANGE PERSONNAL DETAIL

Activity: Integrated Climate Services
 Subactivity: Assessment Services

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Physical Scientist-	Asheville, NC	ZP V	1	113,735	113,735
Physical Scientist-	Asheville, NC	ZP V	2	113,735	227,470
Technical Writer-Editor	Asheville, NC	ZP V	1	113,735	113,735
Total			<u>4</u>		<u>454,940</u>
less Lapse		25%	<u>1</u>		<u>113,735</u>
Total full-time permanent (FTE)			3		341,205
2011 Pay Adjustment (0%)					0
2012 Pay Adjustment (0%)					0
TOTAL					<u>341,205</u>

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employm	
Full-time permanent	3
Other than full-time permanent	0
Total	<u>3</u>
Authorized Positions:	
Full-time permanent	4
Other than full-time permanent	0
Total	<u>4</u>

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Integrated Climate Services
Subactivity: Assessment Services

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$341
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	341
12 Civilian personnel benefits	113
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	346
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	200
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	1,000

Communication and Education: NOAA Climate Services Portal (Base Funding: 0 FTE and \$0;+2 FTE and +\$1,500,000): NOAA requests an increase of 2 FTE and \$1,500,000 for a total of 2 FTE and \$1,500,000 to support development of a new NOAA Climate Services Portal Program that will provide easy public access to NOAA's climate data, information, and services.

Proposed Actions

Important measures of success for NOAA's climate services will be the ease with which diverse public user communities are able to access and use the data products and information services that NOAA provides, the frequency with which they do so, and the trust they place in NOAA's climate resources. With the funds requested, CS will work with partners across NOAA to build a comprehensive new Climate Services Portal (CS Portal). The CS Portal will be a central component of NOAA's commitment to integration and delivery of climate services by enhancing public access to useful climate data and information. In addition to data and products, the CS Portal will offer a broad array of climate communications, outreach, and educational materials that demonstrate NOAA's leadership in climate science research, observations, modeling, and service to society.

As the public's primary online point of entry into NOAA's Climate Services, the Portal will be a central component in the agency's climate communications, education, extension, and outreach strategy. The CS Portal will have audience-focused sections designed to serve four key segments of society: (1) climate science decision makers and policy leaders; (2) scientists and applications-oriented data users (e.g., resource managers and business leaders); (3) educators; and (4) climate interested and attentive members of the public. The NCS Portal will provide easily accessible, user-friendly climate data and information produced in styles and formats targeted to meet the needs of these four key stakeholder communities. Recent developments in web-based technologies make it possible for NOAA to present both existing data and new products in formats that are readily usable by decision-makers in government agencies and businesses (e.g., geospatial tools that enable resource managers to place information on impacts and affected resources in a place-based context relevant to planning or permitting).

Because the CS Portal is central to NOAA's climate services, development of a Prototype for the CS Portal began in September 2008 and is currently underway courtesy of temporarily donated personnel from four NOAA Line Offices (www.climate.gov). At the end of the Prototyping Phase, the Prototype will contain (1) a main home page as primary point of entry; (2) a nascent climate science magazine for outreach to the public (called "ClimateWatch"); (3) a small subset of NOAA's catalog of climate data and services contained in an initial "Data & Services" section for data users; (4) links to existing climate-related education materials in the Education section; and (5) links to existing, already reviewed factual information about climate for policy leaders.

With the funds requested, NOAA will transition from the Prototype Phase to a phase of active development of the comprehensive Portal that will represent the full breadth and depth of NOAA's climate science and services. Specifically, the funding will include improvements to the Portal's interface, and a more complete build out of the four audience-focused sections of the Portal, along with procurement and integration of the NOAA Climate Portal server system, and hiring full-time administrative personnel to manage the system. Beginning in FY 2012, the Portal will have a dedicated Program Manager to direct and oversee its development. Additionally, this request includes 2 positions to help coordinate the CS Portal's development and to ensure there is a seamless integration of all NOAA's climate-relevant data products, services, and resources into the NCS Portal.

The Portal will be guided by interactive public dialogues, users' requests, and other audience engagements. NOAA will use new Web technologies to serve climate data and products in formats that are readily usable by targeted segments of society. The full Portal's scope, product content, and functionality will evolve based on user needs and expectations for climate data and information. User feedback on products and services available through the CS Portal will also provide important insights into user applications and climate information needs that can help guide the future evolution of NOAA climate services.

Statement of Need and Economic Benefits

Societal concern about the impacts of climate change is growing. Citizens in public and private sectors want easy access to credible climate science information to help them make informed decisions affecting their lives and livelihoods. Weather and climate influences almost every sector of society, and affects up to 40 percent of the United States' \$10 trillion annual economy. (NRC report, 2003 entitled "Satellite Observations of the Earth's Environment: Accelerating the Transition of Research to Operations"). As the leading provider of climate, weather, and water information to the nation and the world, NOAA is a logical source for citizens to turn to for climate information. NOAA must expand and improve the way it communicates, educates, reaches out to, and engages with public stakeholders to better meet the nation's needs for timely, authoritative climate data and information.

Citizens are increasingly going online to seek credible, authoritative climate information. However, users report having difficulty locating and using NOAA's online data products and services. Thus, resolving this online accessibility issue will be one of the CS Portal's main benefits. The use of portal technology and emerging data integration and visualization tools provide an opportunity for NOAA to bring together multiple datasets from diverse disciplines and sources to deliver a more comprehensive picture of climate in the context of affected resources, communities and businesses. Additional benefits include wider extension of NOAA's data to other media such as television and free-choice learning venues, thereby increasing public exposure and engagement.

This scalable approach to the Portal development will allow NOAA to centralize access to the agency's climate data and information resources and provide audiences with opportunities to provide feedback to help NOAA make ongoing, iterative refinements in its climate services.

Schedule & Milestones

- Conduct user testing of the CS Portal Prototype interfaces (FY 2012)
- Evolve CS Portal's interface and expand its scope based upon user-driven feedback about its functionality and contents (FY 2013)
- Develop and deliver seamless, user-friendly, map-based tools for browsing and retrieving NOAA's climate data records across the various agency's data centers (FY 2014)
- Develop and deliver online modules for science educator (middle and high school grades) professional development; develop and deliver online modules for students (middle and high school) to conduct inquiry-based, online investigations of the climate system (FY 2015)
- Conduct user-driven refinement of NOAA Climate Portal functionality and interface (FY 2015 and 2016)

Deliverables

- Improved access to NOAA's climate data and information via a single, comprehensive Web portal with four audience-focused interfaces and a comprehensive assessment and evaluation of the Portal's overall impacts on our target audiences.

Performance Goals and Measurement Data:

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Percentage improvement in the Quality of Relationship with users in the delivery and communication of climate information and services (Quality of Relationship is a formal method of measuring indicators like trust, satisfaction and reliability), Measure 16f						
With Increase	0	10%	15%	20%	25%	25%
Without Increase	0	0	0	0	0	0

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Percentage growth in number of unique visits to NOAA's Climate Portal over the FY 2010 level.						
With Increase	0	0	10%	10%	10%	10%
Without Increase	0	0	0	0	0	0

Description: This performance measure will show the ongoing increase in the average number of unique visits to the Portal among the four target audiences the CS Portal serves.

PROGRAM CHANGE PERSONNAL DETAIL

Activity: Integrated Climate Services
 Subactivity: Communication & Education

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
IT Specialist	Charleston, SC	ZP-IV	1	81,823	81,823
IT Specialist	Asheville, NC	ZP-IV	1	81,823	81,823
Physical Scientist	Camp Springs, MD	ZP-IV	1	89,033	89,033
Total			<u>3</u>		<u>252,679</u>
less Lapse		25%	<u>1</u>		<u>63,170</u>
Total full-time permanent (FTE)			2		189,509
2011 Pay Adjustment (0%)					0
2012 Pay Adjustment (0%)					0
TOTAL					<u>189,509</u>

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	2
Other than full-time permanent	0
Total	<u>2</u>

Authorized Positions:

Full-time permanent	3
Other than full-time permanent	0
Total	<u>3</u>

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Integrated Climate Services
Subactivity: Communication & Education

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$190
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	190
12 Civilian personnel benefits	57
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	904
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	350
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	1,500

APPROPRIATION: OPERATIONS, RESEARCH, AND FACILITIES

SUBACTIVITY: CLIMATE OBSERVATIONS AND MONITORING

The objectives of the Climate Observations and Monitoring subactivity are:

- Measure, capture and preserve the historical record of the global environment for continuous climate monitoring and periodic assessments in support of climate services.
- Provide the Nation with the long-term stewardship of past, present and future environmental observations
- Provide access to long time series of environmental data for national needs related to security, the economy, the environment, and public safety

Access to quality observations and science-based analysis of climate data has provided our Nation with unique abilities to minimize climate related risk and maximize climate-related opportunities. The Climate Observations and Monitoring Program measures and monitors the ocean and atmosphere to provide data on essential climate variables (ECVs). Research and programmatic activities are primarily organized and/or carried out in Silver Spring, MD; Asheville, NC; Boulder, CO, Seattle, WA; Miami, FL, Stennis Space Center, MS; and at various universities, including cooperative institutes, throughout the U.S. These data are used for climate research and are assimilated into earth systems models in order to understand the climate of the past, provide attribution to the present and future states of the climate, and optimize observing systems; and to better quantify the information on atmospheric composition and feedbacks that contribute to changes in Earth's Climate.

NOAA environmental data and information form the basis for making decisions that have far-reaching economic effects at local, regional, national, and global levels. These data are summarized into data products and used in scientific assessments that are distributed to hundreds of thousands of researchers in government, commerce, industry, science, engineering, and national defense. As an example of the impact of NOAA data and information, the Department of Commerce's Bureau of Economic Analysis estimates that at least one-third of the U.S. Gross Domestic Product is weather and climate sensitive (\$4 trillion in 2005 dollars) ranging from finance, insurance, and real estate to services, retail and wholesale trade and manufacturing. The data and information management activities NOAA provides are critical in enabling decision makers, scientists, and businesses to make more informed assessments and conclusions based upon easily accessible and reliable data and information.

This subactivity provides the core funding for the three NOAA Data Centers: the National Climatic Data Center (NCDC), the National Oceanographic Data Center (NODC), and the National Geophysical Data Center (NGDC). NOAA's three National Data Centers provide the Nation with the long-term preservation (safe storage) and access for current and future generations to the past, present, and future environmental observations and associated data recorded across the United States and globally. Access to long time series of environmental data is critical to satisfying the Nation's wide range of needs related to the national security, the economy, the environment, and public safety.

NOAA's climate observations and monitoring efforts are comprised by: 1) ocean observations, 2) atmospheric observations, 3) climate data and information services, 4) ocean data and

information services, 5) geophysical data and information services, 6) environmental services, and 7) Observations, Monitoring and Prediction.

OCEAN OBSERVATIONS

The Global Ocean Observation System (GOOS) is necessary for climate research and prediction as well as long-term monitoring for climate change detection and attribution. NOAA provides the major U.S. contribution to the Global Component of the Integrated Ocean Observing System (IOOS), as codified in the Integrated Coastal and Ocean Observation System Act of 2009. IOOS is also the U.S. contribution to the GOOS and the ocean baseline of the Global Earth Observation System of Systems (GEOSS). This international observation system is based on measuring a set of core variables (for example: ocean temperature, surface winds, salinity, sea level, carbon dioxide) that have been agreed to nationally and internationally as necessary to provide the information needed by the United States and the other nations to effectively plan for and manage their response to climate variability and change. In addition, GOOS includes Arctic observations as part of the U.S. contribution to the International Arctic Observing Network. The major elements of GOOS are: 1) Argo Profiling Floats, 2) Surface Drifting Buoys, 3) Tide Gauge Stations, 4) Tropical Moored Buoys, 5) Ocean Reference Stations, 6) Ships of Opportunity (SOOP), 7) Ocean Carbon Networks, 8) Arctic Ocean Observing System, 9) Dedicated Ships, 10) Data Management, Data Assimilation, and Analysis. Satellites are also critical elements of this composite system, but they are listed elsewhere in the NOAA and NASA budgets. It must be emphasized that all of these interdependent elements working together provide the needed system.

Argo Profiling Floats

These floats provide the subsurface measurements of ocean temperature and salinity that are necessary, along with the satellite altimeter measurements, to monitor global sea level change and upper ocean heat content. This is an international effort with 22 nations plus the European Union currently maintaining 3,000 floats.

Surface Drifting Buoys

Sea surface temperature is the single most important ocean variable for the global heat, water, and carbon cycles. NOAA maintains with its 14 international partners, a global array of 1,250 surface drifting buoys. This array is used to calibrate satellite observations and reduce errors in global measurement of this critical ocean climate variable. The drifters also measure surface currents globally and provide sea surface data under hurricanes to help improve hurricane intensity and landfall predictions.

Tide Gauge Stations

Sea level rise is one of the most immediate impacts of climate change. NOAA in cooperation with 66 nations is implementing the Global Climate Observing System (GCOS) sea level reference network of 180 tide gauge stations. The stations measure sea level change at the coast and are used to calibrate and validate the satellite altimeter measurements of the deep ocean. They report in near-real-time and are also used for the tsunami warning system, storm surge, navigation, and other coastal marine services.

Tropical Moored Buoys

The Earth's tropics are the ocean's major capacity for heat exchange with the atmosphere. The Pacific El Niño influences global climate and weather patterns. Together with international partners, NOAA is working to instrument all three tropical oceans - the Pacific, Atlantic, and Indian Ocean - for continuous real-time measurement of ocean-atmosphere exchanges that affect the way our climate varies from year to year.

Ocean Reference Stations

NOAA, in cooperation with the National Science Foundation and international partners, is implementing a sparse global network of the highest quality ocean reference station moorings, to provide the most accurate long-term climate data records of oceanic and near-surface atmospheric parameters in key ocean regions. The surface and subsurface measurements from these Reference Stations have been a cornerstone of the documentation of long term changes in the ocean and provide “ground truth” for improvement of forecast models. This network also monitors major ocean currents (for example, the Gulf Stream) to identify changes in circulation that could provide possible indications of abrupt climate change.

Ships of Opportunity (SOOP)

The global atmospheric and oceanic data from Ships of Opportunity have been the foundation for understanding long-term changes in marine climate and are essential input to climate and weather forecast models. The Ships of Opportunity are also the system’s primary vehicle for deployment of the Drifting Buoys and Argo Floats.

Ocean Carbon Networks

Projecting decadal to centennial global climate change is closely linked to assumptions about feedback effects between the ocean and atmosphere related to sequestering of carbon in the ocean and additional input of carbon dioxide into the atmosphere. The SOOP fleet and NOAA in cooperation with the National Science Foundation and international partners are implementing an ongoing ocean carbon inventory surveying the globe once every ten years, supplemented by autonomous carbon dioxide sampling instruments on the ships and the moored buoys to measure the air-sea exchange of carbon dioxide seasonally.

Arctic Ocean Observing System

Over the past 20 or more years, significant changes have been noted in the Arctic, such as thawing of permafrost, earlier break-up of ice on rivers, and thinning of the ice cover on the Arctic Ocean. NOAA is joining with other Federal agencies and international collaborators to begin a long-term effort to deploy an Arctic Ocean Observing Network. Current NOAA efforts focus on developing quantitative estimates of the transport of heat, salt, nutrients and total water volume through the Bering Strait, periodic characterization of the marine ecosystem in the Chukchi Sea, and pilot deployments of buoys to measure Arctic sea ice.

Dedicated Ships

Ocean research vessels from NOAA and university partners are essential elements of the support infrastructure necessary to sustain the ocean observing system. The dedicated ships provide the highest quality reference data sets, the platforms for the ocean carbon surveys, and platforms for deployment of the Moored and Drifting Buoys and the Argo Floats.

Data Management, Data Assimilation, and Analysis

A robust and scalable Data Management and Communications infrastructure is essential to the vision of a sustained and integrated ocean observing system. Standards and protocols are essential to enable interoperability across all global and coastal ocean observing systems. Data must be retained and made available for analyses and for assimilation into models to understand and forecast climate change, and for efficiently managing observing system operations and improvements. Thus, the advancement of assimilation techniques and the scientific analysis of ocean data are also important elements of the global ocean observing system.

In addition to these major elements, the CS has cooperative institute partnerships with academic and scientific institutions to foster long-term collaborations dedicated to advancing research. These cooperative institutes are co-located with one or more NOAA facilities to promote scientific exchange and technology transfer, and provide valuable capabilities and expertise to supplement laboratory work. The following competitively-awarded cooperative institutes collaborate with Ocean Observations:

The Cooperative Institute on Marine Ecosystems and Climate (CIMEC), located at Scripps Institution of Oceanography (SIO) at the University of California-San Diego, conducts research on climate and coastal observations, analysis, and prediction, research on biological systems, research in extreme environments, and R&D on observations systems. CIMEC collaborates primarily with the CS Line Office and Southwest Fisheries Science Center.

The Cooperative Institute for the North Atlantic Region (CINAR) is located at Woods Hole Oceanographic Institution, Woods Hole, MA. CINAR conducts research on ecosystem forecasting, ecosystem monitoring, ecosystem management, protection and restoration of resources, and sustained ocean observations and climate research. CINAR collaborates primarily with the CS Line Office and North East Fisheries Science Center.

Each of these elements brings unique strengths and limitations to build the whole. For example, the Argo Profiling Floats measure the ocean's heat content, which is directly related to our changing climate and is reflected in sea level change. Global sea level is measured by satellite altimeters, which must be continuously calibrated using the Tide Gauge Stations. The ocean's heat is transferred to the atmosphere at the sea surface (sea surface temperature directly influences the Earth's climate and our daily weather). The sea surface temperature is measured by the Surface Drifting Buoys and Moored Buoys. Ships of Opportunity and Dedicated Ships are necessary to observe the atmosphere over the ocean and deploy the Buoys and Floats at sea. The Argo Float measurements must be calibrated by systematic deep ocean observations from the Dedicated Ships in conjunction with the Ocean Carbon surveys. The entire system must go forward together; none of the elements can do the job by itself. This system was designed to meet climate requirements, but it also provides the global ocean backbone needed to support weather and storm prediction, global and coastal ocean prediction, marine hazards warning, transportation, marine environment and ecosystem monitoring, and naval applications.

ATMOSPHERIC OBSERVATIONS

NOAA's Atmospheric Observations program manages the resource of global climate ground (in situ) and space based data and information to promote global environmental stewardship; to describe, monitor and assess the climate; and to support efforts to predict changes in the Earth's environment. Climate observing networks assemble, develop, and communicate data and information about the trends and variations used to support predictions and projections of climate variation and change and weather to decision makers (e.g. energy, agriculture, national, regional, state and local officials). To this end, NOAA is responsible for infrastructure that addresses: improving climate observations, access, and data management activities associated with large-volume climate databases supplied by satellite and ground-based instruments; implementation of operational updates to NOAA's long-term ocean and atmospheric reference data sets; and improving the performance of the climate focused observational networks. Through the Climate Observations and Monitoring (COM) program, NOAA supports the 1) U.S. Climate Reference Network (USCRN); 2) U.S. Global Climate Observing System (GCOS) and its primary constituent networks; and 3) the U.S. contribution to the global Baseline Surface Radiation Network (BSRN). These three climate benchmark

networks will constitute an Integrated Ensemble of Atmospheric Climate Benchmark Systems to measure atmospheric essential climate variables critical to monitoring and modeling climate variation and change globally, nationally, and regionally. That ensemble represents the U.S. contribution to global climate earth monitoring and modeling activities as envisioned in the internationally vetted Global Framework for Climate Services that was established at the 3rd World Climate Conference in 2009.

U.S. Climate Reference Network (USCRN)

The USCRN Program is designed to address the climate community's requirements regarding long-term (50-100 years) surface air temperature, precipitation, relative humidity, and soil moisture and temperature observations free of biases in order to better monitor climate variation and changes on the national scale. The completed network of 114 sites operates across the contiguous continental U.S. has been operational since the end of 2008. During the period FY 09-16, a total of 29 USCRN stations will be installed in Alaska. Two USCRN stations have been installed in Hawaii to provide information on USCRN performance in unique high elevation and high precipitation climate regimes. Beginning in 2009, soil moisture and temperature, as well as relative humidity sensors are being installed at the 114 USCRN sites across the lower 48 states. A total of 80 sites will have had such sensors installed by the end of FY 2010. This is the first "climate-driven" observing network designed for the specific purpose of acquiring near-real-time and climate-quality observations. USCRN provides baseline, high-quality surface observations of surface air temperature and precipitation used to detect and assess climate variation and change (trends) through a robust long-term climate record. USCRN data will contribute to improved climate and weather model performance (improved confidence) as well as Improved Forecast Skill Scores used by economic sectors. The USCRN also supports the National Integrated Drought Information System (NIDIS) through the inclusion of soil moisture sensors, which provide data critical to understand drought. Observations from the USCRN sites provide benchmark measurements for an improved national climate and weather monitoring network.

U.S. Global Climate Observing System (GCOS)

U.S. GCOS provides U.S. leadership on the global effort to implement a sustained global infrastructure of high-quality, comprehensive ground-based *in-situ* atmospheric climate observations. U.S. GCOS works with regional, national, and international organizations and partners to provide the global observing system and accompanying data management system needed to support the observational data requirements for climate assessments, predictions and projections, and contributes to improved near-term forecasts. GCOS is the formal climate component of the Global Earth Observation System of Systems (GEOSS), and is prominently featured in the U.S. response to the high-level construct of the Global Framework for Climate Services. More information on GCOS can be found at <http://gosc.org>.

GCOS Upper Air Network (GUAN)

The GUAN is a network of 160 stations [see map at http://www.wmo.int/pages/prog/gcos/documents/GSN_Station_Map_2010.pdf] that take regular upper air observations. These stations are a subset of the World Weather Watch Global Observing System. They have been selected to provide a good spatial distribution of stations that can collect and submit good quality upper air data for the Global Climate Observing System; primarily upper air temperature, humidity, and winds. The GUAN complements the higher quality GRUAN network by giving long-term data at a diverse array of sites around the world.

GCOS Surface Network (GSN)

The GSN is a global network of approximately 1,000 stations [see map at

http://www.wmo.int/pages/prog/gcos/documents/GSN_Station_Map_2010.pdf] selected from the network of many thousands of existing meteorological stations. The GSN is intended to comprise the best possible set of land stations with a spacing of 2.5 to 5 degrees of latitude, thereby allowing coarse-mesh horizontal analyses for some basic parameters that are primarily Temperature and Precipitation. The U.S GCOS contribution to the larger international network is the upgrading of about 75 GSN non-US sites with climate quality sensors.

GCOS Reference Upper Air Network

The GRUAN is a planned international network of 30-40 high climate quality upper air stations [see <http://gruan.org>] for providing climate quality upper tropospheric/lower stratospheric vertical temperature and water vapor measurements for climate purposes. GRUAN stations (current GUAN sites) will begin with upgrading current sensors and procedures to improve climate monitoring capabilities requirements. When the reference radiosonde becomes operational the GRUAN sites will launch the reference radiosondes. The U.S. component of GRUAN is planned to involve upgrades to seven current U.S. sites: five US Department of Energy's Atmospheric Radiation Measurement (DOE ARM) Program; one at Howard University in Beltsville, MD; and one at NOAA/NCAR station in Boulder, CO. The GRUAN is intended to begin international operations once a number of technical issues have been solved. Implementation of the network has started, involving the identification of eligible measurement sites, development of a data policy and dissemination scheme and the quest for a common mode of operations.

Baseline Surface Radiation Network (BSRN)

The BSRN is the designated global baseline network 40 sites in contrasting climatic zones from 80°N to 90°S (see map at <http://www.bsrn.awi.de/en/stations/maps/>). Solar and atmospheric radiation is measured at a time resolution of 1-3 minutes. More details available at: <http://www.gewex.org/bsrn.html>. Solar radiation is a key component driving climate change. The U.S. is the largest contributor to the global BSRN include the aging NOAA surface observing systems [Surface Radiation (SURFRAD) network, NOAA component of the joint Solar and Terrestrial Atmospheric Radiation (STAR) network, and U.S component of the Global Energy and Water Cycle Experiment (GEWEX) network], which are falling short of supplying the extent of information needed by the climate research community.

CLIMATE DATA AND INFORMATION SERVICES

The National Climatic Data Center (NCDC), located in Asheville, North Carolina, is the largest climate data center in the world, and is the Nation's designated Federal Records Center (FRC) for climate data. NCDC is one of two operational sites for NOAA's Comprehensive Large-Array Stewardship System (CLASS). The NCDC receives, processes, archives, provides access, disseminates, and conducts objective assessments of ground based and spaced observations. National and international observing systems provide a regional, national, and global perspective of the State of the Earth's weather and climate. Paleoclimate proxy records, i.e., pre-instruments, such as ice and coral cores, and tree rings are also collected, archived, and made available to the global community of researchers and other interested users. The NCDC is a designated World Data Center (WDC) for Meteorology and WDC for Paleoclimatology.

The NCDC provides data, information, products and climate services to all sectors of the economy, delivering weather and climate data and information to nearly two million customers each year for planning, operations, and minimizing risks associated with weather and climate extremes. NCDC provides access and data retrieval via the worldwide web/Internet and responds to thousands of requests received via e-mail, phone, fax, and the mail. NCDC routinely produces operational products for climate monitoring, such as the weekly and monthly

State of the Climate reports, the U.S. and the North American Drought Monitoring Reports, and the Climatology for the U.S. reports. These and other climate assessments support business and government policy makers and implementers. NCDC also works very closely with various regional, state, and local stakeholders.

Over 2.3 PBs of data are now directly accessible from NCDC's website (www.ncdc.noaa.gov). Approximately 400 TBs of data were delivered on-line during the first half of FY 2010, with over 400 million hits and downloads from NCDC's website during that time; a nearly 50% increase over the same period in FY 2009. Several factors account for this increase, including: Continued infrastructure improvements at NCDC to accommodate user demand, the Climate Services Portal prototype release in the second quarter of FY 2010 (over 15 million hits, www.climate.gov), and access to large volumes of Climate Forecast System Reanalysis data via NOMADS.

NOAA climate data users and per cent data requests-retrievals are placed into four general categories: Business 58%, Public 24%, U.S. Government 8%, and Academia 10%. In FY 2008, over 473 million national and international contacts for NOAA climate data and information were made via the Internet; over 5.7 million unique users visited the NCDC website; and 338 terabytes (TB) of data were downloaded including nearly 22,000 paid orders via the On-line Store. This is an increase over FY07, when 315 terabytes of data were downloaded and NCDC's website received 410 million contacts. NCDC set a new quarterly record for data access during the second quarter of FY 2010 with 263 TB's of data downloaded via on-line systems and 207 million website hits. These figures are approximately 40% above the statistics for the same FY 09 quarter. The introduction of the Climate Services Portal website is a major contributor to increase customer interactions with the center.

The NCDC manages the conversion of historical non-digital data records (paper and microfiche) to electronic format and accessibility via the Internet through the Climate Database Modernization Program (CDMP). The NCDC operates and sustains the new Comprehensive Large Array Storage System (CLASS), a NOAA Enterprise System designed to provide long term preservation (safe storage) and access for the large volumes of data that will be generated by new satellites, upgrades to radars, climate and weather models, and other observing systems. The NCDC, in partnership with NASA scientists, develop long time series satellite derived Climate Data Records (CDRs). The National Climate Model Portal (NCMP) will generate and house model based data records and implement an operational archive and access capability for the next generation, high resolution weather and climate reanalysis datasets. NCDC, in cooperation with scientists and other NOAA activities and federal agencies, has designed and deployed the Nation's first climate quality *in-situ* observing network, the U.S. Climate Reference Network (USCRN). NCDC in partnership with other offices within CS, across NOAA, and with other agencies is developing the National Integrated Drought Information System (NIDIS) portal.

Comprehensive Large Array data Stewardship System (CLASS) - Operations Systems (Data Center Operations)

The Data Centers are utilizing CLASS to ensure the long-term preservation (safe storage) and access for data, information, and metadata, particularly for large data sets. Beginning in FY 2008, components of the CLASS Development design began to transition into the Data Centers' operations and become operationally integrated into the data management and customer servicing operations systems. At this time the Data Centers assumed the responsibility for operating and sustaining these components of the CLASS Operations System. The CLASS Operations and Planning Board (COPB), which consists of the Directors of the three Data

Centers, are responsible for the execution of the CLASS Operations budget (ORF). The COPB also reviews the requirements and provides guidance to the CLASS Development project manager and the associated CLASS PAC budget. The CLASS project manager focus is on the information technology required to ingest, store, access, and maintain the submitted data sets. The Data Centers through the COPB are responsible for the sustain operations of the CLASS Operations System, a critical component of NOAA's Enterprise System supporting information preservation and end-to-end stewardship of the archived data, as well as maintaining access interfaces use to support customer service requests.

Climate Database Modernization Program (CDMP)

CDMP supports the NOAA mission to collect, integrate, assimilate, and effectively manage Earth observations on a global scale ranging from atmospheric, weather, and climate observations to oceanic, coastal, and marine life observations. Many of these holdings, which are part of the U.S. National Archives, were originally recorded on paper, film, and other fragile media, and stored at various NOAA Centers. Prior to CDMP, not only were these valuable data sources mostly unavailable to the scientific community, but storage technology for the archive was becoming obsolete. Without proper preservation of the media, the information they contained was in danger of being lost forever. Today, CDMP has greatly improved the preservation and access to NOAA's holdings by migrating many of these resources to new digital media. CDMP will continue transforming these older observations to a more useful and accessible digital media, which will help meet the predicted demand for additional scientific baseline observations. Many significant decisions on future energy use, climate, and infrastructure issues will depend on the accuracy and availability of these data for predictive modeling. The work is far from done and over the next decade millions of pieces of data will be prioritized and then preserved digitally to meet the needs of the scientific and business communities.

The CDMP program is a partnership with four private sector contractors. CDMP goal is to preserve and make available climate data going back several hundreds of years that range from the bottom of the ocean to the top of the atmosphere. To date over 56 million images have been digitized for on-line access. Over 12 terabytes of data have been keyed and converted to digital format extending the historical climate record back to the early 1800s and in some cases the 1700s. These are now readily accessible via the Internet and other web-based portals. Environmental publications and historical documents are now available in electronic form and can be downloaded to your computer. There remains many more of these National Treasures, the climate history of the U.S. and the world, to be converted to digital formats for easy and convenient access by anyone. A true understanding and appreciation of Climate Change cannot be achieved until the complete history is available to researchers and others.

CDMP also supports the preservation of other important NOAA environmental data, ranging from ocean cores below the seabed floor to the top of the ionosphere. For example, the Tsunami Program has had more than 25,000 photos, slides, negatives, microfiche, and hardcopy images electronically scanned. The Tsunami Warning Centers used these historical data as tools in decision-making for hazard assessment, and in validating tsunami propagation and inundation models. The increase in the accessibility of quality historical data is helping researchers worldwide to improve real-time monitoring and forecasting of environmental, solar, and geophysical events.

Climate Data Records Program (CDR)

The CDR Program's goal is the production of high quality, multi-decadal time series data describing the global atmosphere, oceans, and land surface with a focus on essential climate

variables as identified within GCOS. Building upon the initial successes of the Scientific Data Stewardship (SDS) program, it supports the regular, operational production of CDRs for the atmosphere, oceans, and land surface. CDRs transform raw satellite data into unified and coherent long-term environmental observations and products that are critical to advanced climate change understanding, prediction, mitigation and adaptation. CDRs will be used to detect, assess, model and predict climate change. Climate Data Records (CDRs) and Climate Information Records (CIRs) provide authoritative climate reference sets for use by decision-makers to devise strategies to respond, adapt, and mitigate climate change impacts and trends. The production of CDRs/CIRs requires collaboration between experts in the climate community and experts in data management. It also must be informed by scientific application and associated user feedback on the accessibility and usability of the produced CDRs.

The program is developing three areas for operational and regular production of high-quality CDRs:

- Operational quality assurance of ingested data and regular monitoring of data quality and provenance;
- Generation of authoritative, long-term records through rigorous data analysis and research that will validate and improve these CDRs; and
- Configuration management to ensure the documentation of the product and preservation of the information context to allow future users to understand, modify, and use the CDR.

The CDR Program activities encompass the full range of institutional diversity within the climate community. Scientists NOAA leverages prior U.S. investments by transitioning research products from NASA and other agencies into sustained NOAA operations. A Cooperative Institute for Climate Science (CICS) was established in FY 2010 to draw upon a wide range of expertise from the university research community. The program has adopted approaches that allow organizations producing and archiving CDRs to maintain local autonomy within a context that encourages responsible participation in federations that foster increased data sharing, interdisciplinary data understanding, and improved assessments of data quality. An Announcement of Opportunity was published in FY 2009 to begin a CDR grants program. The CDR Program Office has awarded the FY 2009 and FY 2010 grants and is preparing to incorporate the results of the projects into the CDR framework. The authoritative nature and vitality of the CDRs will be maintained through peer reviews, user recommendations, and independent processing of data describing essential climate variables. Without a CDR processing capability, NOAA's satellite data have significantly less use and value for climate studies.

NOAA's CDR Program is initially focused on critical CDRs that address key societal issues including:

- Water, drought, and floods
- Energy and renewable energy
- Hurricanes and coastal hazards

Major CDR Development and production actions include:

- Algorithm Development, Processing and Re-Processing of Long Term Data Series
- Calibration, Validation and Characterization of Data
- Science and Climate Information Records
- Long Term Stewardship (ensure CDRs are easily understood, accessible and of highest quality)
- Applications for Mitigation and Adaptation, and

- Project Management Support

CDRs address the current state of the climate at the accuracies and resolutions required by users and provide capability to assimilate large and complex data sets into earth systems models. CDRs are distinct from operational weather/hazard satellite products since CDR production:

- Removes/minimizes time dependent biases in satellite data
- Delivers long term seamless homogeneous records characterizing climate change/variation (50+ years)
- Reprocesses the entire period of record as new climate algorithms or sensor knowledge developed

National Climate Model Portal (NCMP)

National Climate Model Portal provides an operational archive and access capability for the next generation, high-resolution weather and climate reanalysis datasets generated by sophisticated coupled ocean, air, and land models running on supercomputers across NOAA and its collaborators (NSF, DOE and others). NCMP is an extension of the National Operational Model Archive and Distribution System (NOMADS). Over 10 TBs of Climate Forecast System Reanalysis (CFSR) data are now accessible via NOMADS. The NCMP leverages existing supercomputer resources to provide a unified and consistent suite of climate information to users at all levels so that they can make better decisions about their specific management needs. Information will be provided on time scales from days to months (forecasts), seasonal to inter-annual (predictions), and decadal to centennial and longer (climate variability and change - projections). These climate model reanalysis products will total over 1PetaByte (PB) (1,000 Terabytes) of data and include:

- Coupled Climate Forecast System Reanalysis and Reforecast (CFSRR) dataset, a modern era reanalysis, a coupled 30 year global reanalysis of the atmosphere, ocean, land, and cryosphere (snow/ ice).
- Climate Prediction Center Reanalysis (CPCR), a long time series historical upper-air reanalysis (1850 to Present).
- Surface Pressure historical reanalysis running at NOAA's Earth System Research Laboratory (ESRL).

NCMP is the users' interface to the system, where they can manage requests, download data, receive user input, and browse the catalog. The Catalog Node is the heart of the system and concentrates on connecting partners, metadata, search and discovery, and peer-to-peer connectivity. It complements the Climate Services Portal helping to remove barriers to data format and system incompatibilities. Decision makers are increasingly seeking information that will help their communities plan and respond to climate variability and change. The NCMP will develop an operational archive and access capability for the next generation, high-resolution weather and climate reanalysis data sets derived from model outputs. Reanalysis output and products will improve our understanding of various climate phenomena, including verification, detection, and determination of drought severity and location; verification and improvements to forecasts of El Niño occurrence and persistence; and verification and improvements to our understanding of the hydrologic cycle and water resources. The Climate Model Portal will be designed to convey key aspects of complex scientific data in a manner accessible to non-specialists and NOAA's climate information user communities. NCMP will also partner with the existing climate model diagnostics community (PCMDI) and collaborate to improve climate

model diagnostics tools, and access to required data sets used by these tools (esp., observations and reanalysis).

The NCMP will provide premiere access to several new key NOAA datasets, and will improve the linkages between research findings and the transfer of those findings into operational capabilities as outlined in the U.S. Weather Research Program (USWRP) Implementation Plan for Research in Quantitative Precipitation Forecasting and Data Assimilation. NCMP will facilitate model and observational data access issues as discussed in such documents as the Intergovernmental Panel on Climate Change, and the U.S. National Assessment, and meets many of the data access goals as outlined in "Fair Weather: Effective Partnerships in Weather and Climate Services," (National Academy Press, 2003).

Finally, NCMP will implement the recommendations by the National Academies, National Research Council (NRC), Board on Atmospheric Sciences and Climate (BADC) recommendation to "...advance the NOMADS archive and capabilities for ensembles based multi-model diagnostics archive, and reforecast datasets to facilitate post-processing" as outlined in "Completing the Forecast: Characterizing and Communicating Uncertainty for Better Decisions Using Weather and Climate Forecasts". (NRC, 2006)

OCEAN DATA AND INFORMATION SERVICES

The National Oceanographic Data Center (NODC), located in Silver Spring, MD, with offices in Stennis, MS; Honolulu, HI; San Diego, CA; Norfolk, VA; and Charleston, SC, is the Nation's permanent archive for oceanographic data, ensuring the public access to and the scientific stewardship of long-term observational records of the global ocean, and U.S. coastal waters and their ecosystems. These holdings document the physical and chemical properties of the oceans, currents, and biota as observed from ships, buoys, satellites and other ocean and coastal platforms extending back nearly 150 years. NODC's division in Stennis, MS provides increased utilization of coastal and oceanographic data using web-based search/access and geographic information system (GIS) techniques to improve the understanding, management and use of coastal areas.

NODC's mission is to ensure that global oceanographic data sets collected at great cost are maintained in a permanent archive that is easily accessible. This is accomplished by: Building scientifically, quality-controlled global oceanographic databases and providing analysis and climatologies of key ocean variables; Supporting ecosystem management by providing access to the Nation's coastal and ocean data resources; and Providing information technology services in a secure, sustainable environment.

The NODC serves more than 800,000 users annually through the Internet and provides a variety of publications including atlases and technical reports published on digital media and paper. Examples of the most requested products include the World Ocean Database and Atlas, the International Atlas of the Ocean series, and sea surface temperature climatology derived from satellites and data sets gathered from operational ocean observing systems worldwide. The user community includes resource managers, researchers, educators, and maritime industry professionals from Federal, state and local agencies as well as academia and the public. NODC is a designated World Data Center for Oceanography and provides leadership for international data exchange programs through the Intergovernmental Oceanographic Commission (IOC).

Ocean Data Stewardship

NODC's Ocean Data Stewardship (ODS) group provides comprehensive scientific stewardship

for national and international marine environmental and ecosystem data and information. The ODS acquires, archives, provides access, and assesses global and coastal marine ecosystem data from domestic and foreign sources. It quality controls and archives ocean data to create a trusted repository of historic data. ODS assesses the physical, biological and chemical conditions derived from in situ oceanographic observations, satellite remote sensing of the oceans, and ocean model simulations to develop and distribute improved products and climate data records. It develops and distributes global and regional, integrated, comprehensive, scientific quality-controlled ocean profile databases and gridded, objectively analyzed fields based on the data in these databases. ODS performs research using historical oceanographic data to determine the role of the world ocean as part of the earth's climate system. It prepares technical publications, atlases, scientific papers/articles for various scientific journals and meetings, and scientific products for dissemination internationally.

Coastal Data Stewardship

NODC's Coastal Data stewardship group supports marine environmental and ecosystems stewardship by providing access to the nation's coastal data resources. CDS accomplishes this mission by using established and emerging technologies to support end-to-end data management for NOAA and NOAA partners in Federal, State, local, academic, and other organizations. CDS products are intended to bring together scientists and coastal managers to act as an important source of coastal ecological and observational data and information for the American public at large.

GEOPHYSICAL DATA AND INFORMATION SERVICES

The National Geophysical Data Center (NGDC), located in Boulder, Colorado, builds and maintains long-term archives of scientific data with a special emphasis on scientific stewardship of data acquired by NOAA observing systems. Data holdings include bathymetry, solar, geophysical, space environment, and earth observing satellite data. The NGDC plays an integral role in the Nation's research into the environment, at the same time providing public domain data to a wide group of users. The NGDC works very closely with NOAA's Space Weather Prediction Center and Office of Coast Survey to provide archive and access of space weather and hydrographic observations. NGDC works with contributors of scientific data to prepare documented reliable data sets, currently maintaining more than 850 digital and analog data sets, and continually developing data management programs that reflect the changing world of geophysics in an era of electronic data access. NGDC provides funding to the National Snow and Ice Data Center (NSIDC) at the University of Colorado for archive services of polar data. NGDC's unique capabilities have attracted other mission-related functions. NGDC is one of two operational sites for NOAA's Comprehensive Large-Array Stewardship System (CLASS) and is the parallel collection site and archive for the Global Positioning System Continuously Operating Reference Stations (GPS CORS). NGDC is responsible for the development and maintenance of the World Magnetic Model for the Department of Defense and also operates World Data Centers for marine geology and geophysics, solar terrestrial physics, and glaciology for the International Council of Science under the auspices of the U.S. National Academy of Sciences.

Through the NOAA Climate Database Modernization Program (CDMP) and other means, the National Geophysical Data Center (NGDC) acquires, stewards and disseminates long-term climate records of the solar and space environments. Solar activity measures, such as the historical sunspot numbers, provide quantitative measures of solar variability that are incorporated into large-scale climate models. Related to this, NGDC works with climate scientists within the local Boulder area to maintain within NOAA an accurate record of total solar irradiance and solar spectral irradiance derived from satellite measurements and to advocate for

measurements of solar irradiance continuity as a primary forcing function in climate modeling. NGDC is also responsible for monitoring the long-term records of anthropogenic nighttime lighting which are used to calculate changes in impervious surface areas and other factors that can influence local climate variability. NGDC maintains the largest collection of ionospheric sounding data stretching back to the 1930's which have been used to infer climate related changes in the upper atmosphere, including the stratosphere and above. Finally, NGDC space weather datasets obtained by sensors on NOAA's fleet of polar and geosynchronous satellites provide a calibrated record of changes in the local space particle environment within the past 30 years.

ENVIRONMENTAL SERVICES

The goal of Environmental Data Systems Modernization (EDSM) is to provide increased access and utility to environmental data, information, products, and services through the use of innovative technologies and techniques. Environmental data and information under the stewardship of NOAA are vital to a wide range of weather sensitive sectors of the economy such as: energy and water resources management, aviation, construction, engineering, utilities, food production (agriculture and aquaculture businesses), multi-modal commerce, tourism, manufacturing, and the insurance industry. Business and government leaders, as well as researchers have critical needs for quality long time-series of historical and recent national and global data to evaluate the current status of the environment, to assess long-term environmental trends, and to predict future environmental conditions and events.

Environmental Data Systems Modernization (EDSM) supports an integrated suite of functions to preserve and exploit the full scientific value of NOAA's environmental, such as: 1) Sustain and Operate timely/convenient access to the full range of data in the CLASS Operations System (integrated into the Data Center infrastructure), 2) Sustain and Improve non-CLASS IT infrastructure that supports customer services and data management functions, 3) Improving the Integrity and Fidelity of the historical climate record, a function of Scientific Data Stewardship, and 4) Integrate Observing Systems (IOS) activities, such as the Integrated Surface Data (ISD) structure for easier and more timely access to similar data from different observing systems, improved integrate metadata documentation and access, and near real time monitoring of observing systems performance, "Health of the Network – (HON)" to detect and correct potential data problems before they become a part of the long term climate records.

OBSERVATIONS, MONITORING AND PREDICTION

Climate Services provided by the Climate Prediction Center (CPC) (<http://www.cpc.noaa.gov/index.php>) include a broad range of climate products and services related to climate monitoring, short-term climate fluctuation forecasts, and information on the impacts of climate patterns on the nation. Their product suite spans time scales from a week to seasons, extending into the future as far as technically feasible, and covers the land, the ocean, and the atmosphere, extending into the stratosphere. These climate services are available for users in government, the public and private industry, both in this country and abroad. Applications include the mitigation of weather-related natural disasters and uses for social and economic good in agriculture, energy, transportation, water resources, and health. Continual product improvements are supported through diagnostic research, increasing use of models, and interactions with user groups.

Deliverables/Outputs

Ocean Observations Deliverables

Deliverables	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Tide Gauge Reference Stations w/GPS installed (Cum Total #)	105	110	115	120	125	130
Deep Argo deep floats deployed (Cum Total #)	0	0	0	0	10	20
Ocean Reference Stations deployed (Cum Total)	11	11	11	11	12	12
Drifting Buoy Array deployed (Total #/year-reseeding the array)	1,000	1,000	1,000	1,000	1,000	1,000
Tropical Moored Buoys (TAO/PIRATA/RAMA) installed (Cum Total #)	82	86	86	89	89	89
Tide Gauge Reference Stations	63	63	63	63	63	63
Ice Buoys/Stations Reporting (Cum Total #) Typically 2-yr life-cycle refresh.	4	4	4	4	4	4
Ocean Carbon Surveys conducted (Cum Total #)	13	15	17	18	18	18

Atmospheric Observations

Deliverables	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
USCRN stations installed in Alaska (Cum Total #)	7	11	17	23	29	29 100%
USCRN Data Recovery Rate from all commissioned USCRN sites. (Cum Total %/year)	95	95	95	95	95	95
GCOS: Global Surface Network (GSN) Stations Upgraded or Installed (Cum Total # stations)	4	6	8	10	12	14
GCOS: Global Upper Air Network (GUAN) Stations Upgraded or Installed (Cum Total # stations)	1	3	4	5	6	7

Climate Data Modernization Program (CDMP) Deliverables

CDMP Milestones/Deliverables	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Pages imaged (Number/Year)	150K	150K	150K	150K	150K	150K

Pages Imaged (Cumulative Total Number)	56.0M	56.1M	56.3M	56.5M	56.7M	56.8M
Records keyed (Number/Year)	3M	2M	3M	2M	2M	3M
Records Keyed (Cumulative Total Number)	81M	83M	86M	88M	90M	93M

Climate Data Records (CDR)

Deliverables

- Transition to Operations: Sea Surface Temperature CDR, Atmospheric Temperature Profiles CDR, and Northern Hemisphere Snow Cover CDR bundles
- Initiate Development of Sea Surface Height/Altimetry CDR bundle and Global Precipitation Climatology Project (GPCP) CDR bundle
(A “bundle” includes a variable number of related geophysical CDRs derived through a common algorithm or retrieval approach.)

National Climate Model Portal (NCMP)

Deliverables

- NOAA Reanalysis Web Page for collection of user requirements and input.
- Ingest, Archive, and Access to the next generation reanalysis datasets (CFSRR, CPCRR, and SFC Historical).
- Model-to-Observational inter-comparison capability.
- Prototype Customer Service support capability and a research quality help desk supporting NCMP users.
- A reanalysis clearinghouse to host consensus (satellite, in-situ, and radar) datasets for the next series of NOAA reanalysis.

Environmental Data Services

Deliverables	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
EDSM: Observing systems regularly monitored on an operational basis for nominal system status and for random and time-dependent errors. (Cum Total # of systems monitored)	8	8	9	10	11	12

Climate Data and Information Services (NCDC)

Milestones/Deliverables	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Data ingested annually and placed in NCDC primary archive. (Total PBs/yr)	5.9	7.3	19.0	42.5	66.0	96.3
Data & information added annually to on-line access (in-situ + radar + satellite).(Total PB/yr)	2.0	3.5	8.0	15.0	25.0	40.0

Data/Information available for retrieval via the WWW. (Cum Total PBs)	4.5	8.0	16.0	31.0	56.0	96.0
Volume of data (in-situ + radar + satellite) delivered online to customers. (Total TB/yr)	700	1,200	2,000	3,000	4,500	6,000
Research Climate Data Sets Transitioned to Operations (transferred to ARC) (Cum Total #)	2	2	3	3	4	4
Climate Data Sets Upgraded/ Updated within the Applied Research Center (ARC) (Cum Total #)	43	50	57	64	71	78
Paleoclimate Reconstructions (Cum Total #)	15	18	21	24	27	30
Climate Extremes Indices providing socioeconomic impacts information (Cum Total #)	3	3	3	3	3	3

CLASS Operations System

Safe Storage and Access Capability and Capacity (Volume for One Copy/One Site) (Mapped against Aug 09 Satellite "Fly Out" Plan, Radar Upgrades, Model Data, Other Data)						
	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Annual Increase - New Data/Year (TB/FY)	5,458	5,978	6,237	6,437	8,067	9,859
Cumulative Total Data (Terabytes - TB)	8,839	14,816	21,053	27,490	35,557	45,416

Ocean Data and Information Services Deliverables

- Increased number of climate data and information products recognized as authoritative data records
- Timely, more accurate and reliable ocean data and integrated NOAA products
- Expanded (new climate variables) ocean data bases that are accessible, in standard formats and can be integrated with user applications
- NOAA-wide access to key digital journals and information data bases

Geophysical Data and Information Services (excluding CLASS)

Milestones/Deliverables	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Cumulative total of data ingested and placed in the archive consisting of onsite and offsite holdings. Unit of measure is Terabytes (TB).	576	634	697	767	843	928

Volume of data and information delivered online to customers. Unit of measure is TB/yr.	133	146	161	177	195	214
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Performance Goals and Measurement Data

Ocean Observations

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Reduce percent error in seasonal forecast of Arctic sea ice loss and regrowth	50%	50%	50%	50%	50%	50%
Description: Percent reduction from the FY 2008 baseline in forecast error relative to observations. Current sea ice outlook is based on statistical evaluation of recent past years and is only generated for summer months.						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Reduce the error in global measurement of sea surface temperature (°C), Measure 16c	0.50	0.50	0.50	0.50	0.45	0.35

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Increased percentage of global in situ ocean observing system implementation.	61%	61%	61%	61%	61%	61%
Description: This measure tracks the percentage of global coverage of the Global Ocean Observing System. There are eight (8) individual ocean observing systems and one data management system that make up GOOS. The % completion of the eight systems determines the cumulative total % of this PM. A predictive understanding of the Earth's climate is critically dependent on quantitative measurements of ocean parameters - the ocean is second only to the sun in effecting climate change and variability.						

Atmospheric Observations

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Increased percentage of atmospheric, ocean, and select terrestrial climate "state variables" with quantitative analysis reported in NOAA's Annual State of the Climate Reports.	67%	74%	81%	85%	89%	93%
Description: 100% Target: At least 42 atmospheric, oceanic, and select terrestrial climate "state variables" measured and used. (Ref: Strategic Plan U.S. CCSP, App 12.1) Essential atmospheric, ocean, and terrestrial climate variables have been identified by the U.S. and the						

international communities in support of the United Nations Framework Convention on Climate Change, of which NOAA was a part. These 42 climate state-variables are considered critical to advancing the knowledge and understanding of the climate.

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Improved confidence in the monitoring and detection of Alaska climate change using the observed Temperature record produced by commissioned USCRN sites in Alaska. (Cum Total % confidence).	62.9	67.1	71.7	77.7	83.6	93.9
Description: Final Target is 93.9% confidence: At least 42 atmospheric, oceanic, and select terrestrial climate "state variables" measured and used. (Ref: Strategic Plan U.S. CCSP, App 12.1) Essential atmospheric, ocean, and terrestrial climate variables have been identified by the U.S. and the international communities in support of the United Nations Framework Convention on Climate Change, of which NOAA was a part. These 42 climate state-variables are considered critical to advancing the knowledge and understanding of the climate.						

CLASS

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
CLASS Ops System - Safe Storage and Access Capability and Capacity (One Copy/One Site) (Cumulative Total Data - TB)	8,839	14,816	21,053	27,490	35,557	45,416

Climate Data Records

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
CDRs in Operational Status (Cum Total #)	8	11	13	13	13	13
Description: CDRs provide long-term product consistency through rigorous reprocessing with advanced algorithms, ancillary data and evolved instrument understanding. This measure identifies the number of satellite-derived Climate Data Records (CDRs) that will be transitioned from research into sustained operational production and stewardship. CDRs integrate data collected over multiple decades into unified and coherent global environmental records using proven scientific practices. They are used by societal sectors and regional users to assess and understand climate change and variability and address issues that help maintain our economic viability and improve the security and well-being of the public.						

NOAA Climate Model Portal

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Access to increased reanalysis and data available to operational and research users from the next suite of NOAA's climate weather reanalysis and reforecast datasets in an interoperable Web Service architecture. (Increase TBs/yr)	1,000	1,250	2,000	2,500	4,500	4,500
Description: The goal is to increase the terabytes of data made available to users for the next generation climate analyses by developing and implementing an operational archive and user access capability. Data records will be produced from three main current and planned reanalysis projects and will be uploaded to a user accessible web portal as they are completed.						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Model to observational inter-comparison capability with several data types and formats, e.g., netted, Grab, ASCII, BUFR (Cum Total #)	4	6	8	8	8	8
Description: This PM will prototype a user capability that permits the comparison of several model output forms, with in-situ observational data sets with the end goal of improving both the models, and the observations since each have their own strengths and weaknesses.						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
On-line public and private access to climate model diagnostics capabilities and NCMP data, scientifically vetted partner-coordinated climate model diagnostics tools(i.e., CDAT, NOMADS) (Cum Total Number)	2	3	3	4	6	7
Description: Specialized climate model analysis and diagnostic tools have already been developed within the climate and weather modeling communities that permit advanced statistical and dynamical analysis, sampling, interpolation or extrapolation to find error in models. This goal will advance these existing tools based on advanced models and user preferences, and in collaboration across Agencies and the user community, implement several of these requested tools within the NCMP.						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
NOMADS / NCMP/CLASS long term archive and access capabilities (Cum Total TBs Data Accessible)	-	600	2,000	2,500	4,500	6,500
Description: The goal is to develop NCMP front-end applications that permit access to the CLASS deep archive, both on disk, and on tape.						

Climate Data & Information

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Safe Storage (NCDC Primary and Security archive), climate data from NOAA/other observing systems consistent with NARA standards. (Cum Total PBs)	18.7	33.3	71.3	156.3	288.3	480.9
This measure reflects the amount of data safely stored by NCDC that is derived from NOAA observing systems.						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
State of the Climate Annual Report 42 Essential Climate Variables (ECVs) (% & Cum # ECVs fully assessed)	67% 28 of 42	74% 30 of 42	81% 34 of 42	90% 38 of 42	100% 42	-
Track the increase in the number of essential climate variables that have a quantitative analysis and assessment of long-term trends and variations in climate performed and published in future annual issues of the Annual State of the Climate Report. The target of 100% is 42 essential climate variables that have a quantitative analysis performed. With adequate observing systems in place under the stewardship of NOAA, a comprehensive and quantitative analysis of atmospheric, ocean, and select terrestrial variables considered essential can be performed.						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Reduce the number of errors getting into the archived record by early detection of network performance issues. (Cumulative % reduction/year for a given network)	40%	55%	60%	65%	80%	90%
Measures an indicator of the quality of the data by tracking the reduction in the number of errors that are eliminated from the archived record. Reflects efforts to improve processes in data collection and archiving.						

Climate Prediction Center

Performance Measure:

	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
U.S. Temperature Forecasts (Cumulative Skill Score computed over the regions where predictions are made), Measure 16a	21	21	22	23	24	25

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Program Changes for FY 2012:

Ocean Observations: Arctic Watch (Base Funding: 2 FTE and \$3,295,000; +1 FTE and +\$3,000,000): NOAA requests an increase of 1 FTE and \$3,000,000 for a total of 3 FTE and \$6,295,000 to make progress toward completing and sustaining Arctic observations as part of the U.S. contribution to the International Arctic Observing Network and the associated Global Ocean Observing System (GOOS). GOOS focuses on the deep marine environment and works with the Integrated Ocean Observing System, which is focused on coastal waters.

Proposed Actions

An expanded, more robust, integrated and coordinated NOAA Arctic program is necessary for addressing immediate and near-term impacts of climate change and supporting NOAA's response capabilities to stakeholders, particularly those in Alaska and the Pan-Arctic region, but also throughout the Nation.

- Enhanced Alaskan and Arctic observations – Establish with international partners an Arctic Observing Network that integrates observations from new and existing atmospheric, coastal, and oceanographic observatories; ocean moorings; ice buoys and stations; and ship transects. These actions will complement other NOAA observations in the region, such as the Carbon Observations and Analysis System and the Climate Reference Network. The additional observations also will feed directly into other NOAA activities, including:
- Modeling and Analysis – Improve and increase representation of Arctic climate processes in global climate models, regional physical-ecological models, and Arctic System Reanalysis and explore development of a predictive capability for Arctic sea ice.
- Provide Alaska/Arctic regional climate and decision-making information and services, user-focused research assessments and projection tools for planners, including data management activities and support for the Alaska RISA.

A coordinated and comprehensive approach, Arctic Watch, will produce the information and applications driven research outputs, such as nowcasts and forecasts tailored to Arctic stakeholder needs, and projections for planning and policy. Many of the necessary components for a NOAA-led Arctic Watch already exist in varying stages of development and execution. However, a greater investment in regional observations and data management are critical for allowing NOAA to serve as a key provider of reliable information, enforce its regulatory responsibilities, and enable effective decision-making across a range of issues affecting or affected by the Arctic. This increase will expand the Nation's Arctic observing capacity and produce data that will allow existing NOAA programs to improve modeling, analysis, and assessment products. The NOAA Climate Program Office will lead this effort and will utilize the capabilities of the NOAA Joint and Cooperative Institutes, such as The Cooperative Institute for Research in Environmental Sciences (CIRES) and the Cooperative Institute for Alaska Research (CIFAR). Other institutions will also play a role, receiving grant support through the Climate Program Office. Due to the complexities of the international collaboration necessary for this program, one new Federal employee position is requested.

Statement of Need and Economic Benefits

The Arctic region is currently undergoing profound atmospheric, terrestrial and oceanic changes related to climate variation and change. In many cases, observed changes far exceed the current model projections. These changes impact human health, infrastructure, fisheries,

ecosystems, coastal communities, international maritime activity, and regional to mid-latitude climate shifts. Diminishing sea ice cover contributes to significant changes in weather patterns both within and surrounding the Arctic, modifies ecosystems, opens new shipping channels, and provides access to previously unobtainable natural resources. Additionally, the current U.S. energy crisis has increased interest in the Arctic region as a source for oil and natural gas exploration/extraction and as part of a national energy policy.

The state of Alaska, academia, Federal agencies with Arctic responsibilities, industry, international partners, and other users have expressed concern that current available climate observations and data are not at the spatial scale necessary for guiding Arctic management decisions. The NOAA Alaska Regional Collaboration Team has completed a comprehensive Integrated Services Plan that identifies current and future capabilities that NOAA must provide in support of Alaskans and regional customers, which includes climate observations, monitoring, and applied research to support economic development and allows for informed adaptation and planning efforts. More broadly, the National Academy of Sciences has called for establishment of an internationally coordinated Arctic Observing Network. NOAA, with the National Science Foundation, co-leads the U.S. effort to fulfill this need.

At a national level, increased understanding of critical environmental thresholds, such as the dramatic reduction in sea ice cover, warming ocean/coastal temperatures, glacial melt/fresh water intrusions, potential release of carbon and methane associated with permafrost thaw, and sea level rise are essential for addressing our environmental, economic, and national security needs. Higher resolution regional models of climate change, sea ice loss and sea level rise are needed for guidance on climate change at scales important for planning, mitigating, and adapting. To achieve these results, it is necessary to better observe the basic physical state of the Arctic. Stakeholders struggle to utilize the information that does exist because there is currently no cohesive, coordinated clearinghouse or service available. Arctic Watch would fill this niche by providing integrated, scientifically robust, unbiased, and authoritative Arctic climate information necessary for mitigation and adaptation efforts.

The combination of rapid change and increased interest in this region places significant pressure on NOAA to provide support services and information that are required to respond to increased climate change consequences and balance new and existing activities in this region. Additional resources are necessary as NOAA expands and integrates its Arctic observations and services to meet the needs of this rapidly changing environment.

Schedule & Milestones

Milestones/Deliverables	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Ice Buoys/Stations Reporting (Cumulative Total #) <i>Typically 2-yr life-cycle refresh.</i>	4	10	16	16	16	16
Sub-surface Moored Buoys deployed (Total #/yr) <i>Typically replace all each year.</i>	8 (NSF cost share)	8	10	16	16	16
Ship Transects (Total #/year) <i>Transects repeated each yr.</i>	1	2	3	3	3	3
Coastal Observatories Operational (Cum Total #)	2	2	3	3	3	3

Deliverables

By FY 2014, NOAA will contribute annually the following to the International Arctic Observing Network (IAON):

- 16 Ice Buoys (30% of US total planned contribution to IAON)
- 16 Moorings (40% of US total planned contribution to IAON)
- 3 Annual Ship Lines (25% of US total planned contribution to IAON)
- 3 International Coastal Observatories with our Canadian, Russian, and Norwegian partners (75% of US total planned contribution to IAON)

Performance Goals and Measurement Data

Performance Measure: Reduce percent error in seasonal forecast of Arctic sea ice loss and regrowth	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	50%	50%	50%	45%	40%	25%
Without Increase	50%	50%	50%	50%	50%	50%
Description: Percent reduction from the FY 2008 baseline in forecast error relative to observations. Current sea ice outlook is based on statistical evaluation of recent past years and is only generated for summer months. Proposed new observations will enable a transition starting in 2013 to model-based, probabilistic forecasts for all seasons based on initial state of sea ice, and real-time observations of ocean heat content, snow cover on ice, surface air temperature, atmospheric circulation patterns, and solar radiation. New experimental forecasts begin in 2014 with a goal of being at least as good as statistical outlooks, with significant improvement over time as experience is gained.						

PROGRAM CHANGE PERSONNAL DETAIL

Activity: Observations & Monitoring
 Subactivity: Ocean Observations

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Oceanographer/Physical	Silver Spring, MD	ZP-IV	1	89,033	89,033
Physical Scientist	Seattle, WA	ZP-IV	1	87,306	87,306
Total			<u>2</u>		<u>176,339</u>
less Lapse		25%	<u>1</u>		<u>44,085</u>
Total full-time permanent (FTE)			1		132,254
2011 Pay Adjustment (0%)					0
2012 Pay Adjustment (0%)					0
TOTAL					<u>132,254</u>

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employmen	
Full-time permanent	1
Other than full-time permanent	0
Total	<u>1</u>

Authorized Positions:

Full-time permanent	2
Other than full-time permanent	0
Total	<u>2</u>

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Observations & Monitoring
Subactivity: Ocean Observations

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$132
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	132
12 Civilian personnel benefits	40
13 Benefits for former personnel	0
21 Travel and transportation of persons	9
22 Transportation of things	5
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	250
31 Equipment	500
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	2,064
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	3,000

Ocean Observations: Global Ocean Observing System (Base Funding: 89 FTE and \$62,563; +0 FTEs and +\$1,384,000): NOAA requests an increase of 0 FTE and \$1,384,000 for a total of 89 FTE and \$63,947,000. This includes the \$3,295,000 request for Arctic Watch, a component of GOOS. This will continue implementation of the Global Ocean Observing System (GOOS) with an emphasis on improving sea level rise monitoring and understanding. A sustained global observing system is the foundation of all climate research and services. In 2012 incremental advancements across two of the ocean networks will be accomplished, focusing on tracking sources of global sea level rise and storage of heat in the ocean. This will contribute to national preparedness, resilience, and early warning for coastal inundation due to sea level rise coupled with extreme events. This initiative also addresses opportunities identified in NOAA's report to the House of Representatives in 2009, *Implementing the Sustained Global Ocean Observing System for Climate*.

Proposed Actions

Specific enhancements to the global ocean observing system that will advance the FY 2012 priorities of monitoring global sea level rise and its drivers include:

- Tide Gauge Stations (\$200 K): Five reference tide gauge stations will be equipped with GPS receivers and real-time reporting transmitters each year to provide measurement of absolute sea level rise and satellite ground truth, and to provide real-time monitoring for tsunamis, El Niño, and storm surge events.
- Deep Argo Floats (\$800 K): Development and deployment of deep Argo profilers capable of descending to 3000+ meters to measure changes in ocean heat resulting in the expansion of seawater and hence sea level rise.
- Dedicated Ship Time (\$384 K): Sixteen days of ship support will be chartered to deploy deep Argo floats in remote ocean regions for measurement of the ocean's heat storage.

Statement of Need and Economic Benefits

Episodes of devastating coastal inundation over the last decade have emphasized the critical importance of fielding an ocean observing system that can continuously monitor for approaching marine hazards and provide early warnings to the coasts for hazard mitigation. Storm surge, El Niño, tsunamis, as well as gradual sea level rise, all originate in the deep ocean well beyond the coastal zone, where much of our observing capacity currently exists. Gradual sea level rise results from an increase in mass due to melting ice and thermal expansion from ocean heating, which causes an increase in the amount of sea water. Recent studies suggest that much of the ocean heat driving sea level rise may be stored in the deep ocean, beyond routine observation by current technology. Emerging technology, such as deep Argo floats, will be able to better track this heat exchange.

More broadly, the global ocean observing system must deliver continuous real-time measurements that will allow the modeling community to improve data assimilation and therefore improve the accuracy of climate model projections. It must also be capable of delivering quantitative ocean indicators at a few strategic reference locations that will alert the nation and the world if and when major changes are occurring.

Economists project that investment in observing system technology will be amplified by orders of magnitude in socio-economic advantage to the nation in planning for impacts and responses to climate change generally and sea level rise, in particular. The coupling of climate related sea level

change with the high water levels due to extreme events such as hurricanes bring billion-dollar socio-economic impacts and dramatic shifts in our coastal marine ecosystems. Over half of the U.S. population resides in a coastal county, and three quarters of the American economy is generated in coastal states. Sea level rise threatens the stability of our coastal communities, economies, and ecosystems. Improving our understanding of and ability to predict sea level rise will allow for improved planning, informed investments, and the development of targeted risk reduction strategies. Further, US contributions to the global system have been historically more than matched by the contributions of international partners.

Schedule & Milestones

SCHEDULE / MILESTONES	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Installation of permanent GPS receivers at climate reference tide gauge stations		X	X	X	X	X
Development of deep diving Argo floats		X	X	X		
Deployment of deep diving Argo floats					X	X
Ship time (Days at Sea)		X	X	X	X	X

Deliverables

Deliverables	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Tide Gauge Reference Stations w/GPS installed (Cum Total #)	105	110	115	120	125	130
Deep Argo deep floats deployed (Cum Total #)	0	0	0	0	10	20
Dedicated ship support (Cum days at sea/year)	492	508	524	540	556	572

Deliverables

Ocean analysis deliverables to be developed and disseminated include observationally-based and model-based products. Observationally-based products (e.g., global maps of observed ocean heat content, salinity, sea level, currents, etc.) will aid in evaluating and improving ocean and climate models, with a view towards providing improved predictions of climate change (e.g., improved predictions of sea level rise). In addition, model-based products (e.g. ocean state estimated from assimilation of ocean data into ocean models) will be queried to produce targeted products on an “as needed” basis in response to emerging climate priorities. Additionally, the supporting data analysis and delivery infrastructure will be enhanced to facilitate extracting the maximum information from observational data.

Performance Measure:	FY	FY	FY	FY	FY	FY
Increase percentage of global ocean volume measured for temperature, allowing reductions in uncertainty of ocean warming, which accounts for much of sea level rise.	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Increase	48%	48%	48%	49%	50%	51%
Without Increase	48%	48%	48%	48%	48%	48%
<p>Description: This new outcome-based performance measure is under development as a GPRA for FY13 and will provide a quantifiable metric for evaluating the ocean observing system's ability to deliver fundamental climate information, specifically, global measurements of the ocean temperatures that are vital to evaluating sea level rise and the earth's uptake of heat. This measure is connected to the societal benefit of understanding a key contribution (the thermosteric component) to sea level change and documents our ability to measure the dominant heat sink of the planet. Enhanced development of deep ocean instrumentation and implementation of the GOOS, including deep Argo floats and GPS-equipped tide gauge stations, from this increase will enable the delivery of a more robust measure of sea level change.</p>						

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Observations & Monitoring
Subactivity: Ocean Observations

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	32
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	650
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	702
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	1,384

Climate Data and Information Services: Data Center Operations (Base Funding 0 FTE and \$1,500,000; +2 FTE and +\$2,000,000): NOAA requests an increase of 2 FTE and \$2,000,000 for a total of 2 FTE and \$3,500,000 for Data Center Operations to provide NOAA the operational capability to close the gap in long-term safe storage of and access to the Nation's environmental data and information.

Proposed Actions

This request will provide NOAA the operational capability to allow users to search for and acquire the increased amount of archived data. This operational component will address the anticipated increase in data volume of greater than 3,000% over the next several years and ensure environmental observations remain useful and accessible to the widest range of current and future users. It will ensure that environmental observations collected at great expense remain useful and understandable to the widest range of current and future generations. Users will be able to search for and acquire archived data by seamlessly connecting CLASS ingest, storage, and access capabilities with the NOAA Data Center archive management system. This increase also meets emerging requirements associated with implementing NOAA's climate services that include the long-term preservation of the Nation's climate record.

Funding will be used for: two FTEs who will be responsible for coordinating the contractors' efforts, preparing the requirements needed for each major data set and ensuring the objectives are met; communications bandwidth that delivers these large data volumes from the source to the data centers for long term storage (archive and access), required upgrades to software (S/W) and hardware (H/W) to keep the system functional and compatible (integrated), and operators at the data centers for the system S/W and H/W.

Statement of Need and Economic Benefits

A 3,000% increase in data volume, generated from NOAA's investment in observations such as NPPOES Preparatory Project and the Joint Polar Satellite System (formerly NPOESS), requires additional support for operational capabilities to archive and access data. This increase will enable users to search for and acquire the increased amount of archived data by seamlessly connecting the CLASS IT infrastructure capabilities with the Data Center archive management system.

This funding will allow for sustaining the data archiving capability once the increased data comes on line. Operational costs continue to grow as data volumes increase, such as the projected 3,000% increase in data volume in FY 2011 and projected increases in the climate model outputs. This will be followed by an additional projected 3,000% increase in data volume due to the availability of Joint Polar Satellite System data. To fill the gap in NOAA's archive capability and capacity, NOAA will incrementally develop and then transition reliable storage components from CLASS to the NOAA Data Centers. This capability will seamlessly link the CLASS enterprise with the National Climatic Data Center, National Geophysical Data Center, and the National Oceanographic Data Center archive and access management systems.

Schedule & Milestones

	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Introduce CLASS Capability at Data Centers		X	X	X	X	X
Expand/Operate & Maintain CLASS Capacity		X	X	X	X	X
Major Data Generating Programs						
NPOESS Preparatory Program (NPP) – 3,000% increase in data volume		X	X	X	X	X
Joint Polar Satellite System– additional 3,000% increase in data					X	X
GOES-R					X	X
NOAA NEXRAD (operational and enhanced – FY 12 Dual Polarized/Phased Array)			X	X	X	X
JASON-2 and-3	X	X	X	X	X	X
NOAA POES/DOD DMSP (operational: historical and new data)	X	X	X	X	X	X
NOAA GOES (operational: historical and new data)	X	X	X	X	X	X
EUMETSAT MetOp (operational: historical and new data)	X	X	X	X	X	X
NCEP Models/Reanalysis Products (operational: historical and new data)		X	X	X	X	X

Deliverables

FY 2012: CLASS Operational **Capability** – CLASS system components integrated into Data Centers' archival/access management systems.

FY 2013-2016+: CLASS Operational **Capacity** – Expand CLASS safe storage/access capacity to meet introduction of NOAA observational investments and sustain operations and maintenance of CLASS operational components at the Data Centers.

Establishing initial operational capabilities (IOC) at Data Centers – hardware (storage/access), software (OS, processing, and metadata), IT security, communications, and training, and introducing future development components, upgrades, as well as expanded storage/access capacities as each major NOAA observational campaign is deployed.

Performance Goals and Measurement Data

Performance Measure: Ensure the long-term preservation and access to NOAA's environmental observations from new data streams with information on provenance, content, and quality, hence increasing the value and utility of the	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
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data to its maximum potential.
 (Cumulative total number of data
 streams)

With Increase	N/A	1	2	3	5	9
Without Increase	0	0	0	0	0	0

PROGRAM CHANGE PERSONNAL DETAIL

Activity: Observations & Monitoring
 Subactivity: Climate Data & Information Services

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Physical Scientist	Silver Spring, MD	ZP-IV	1	89,033	89,033
Physical Scientist	Boulder, CO	ZP-IV	1	87,815	87,815
Physical Scientist	Asheville, NC	ZP-IV	1	81,823	81,823
Total			<u>3</u>		<u>258,671</u>
less Lapse		25%	<u>1</u>		<u>64,668</u>
Total full-time permanent (FTE)			2		194,003
2011 Pay Adjustment (0%)					0
2012 Pay Adjustment (0%)					0
TOTAL					<u>194,003</u>

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	2
Other than full-time permanent	0
Total	<u>2</u>
Authorized Positions:	
Full-time permanent	3
Other than full-time permanent	0
Total	<u>3</u>

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Observations & Monitoring
Subactivity: Climate Data and Information Services

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$194
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	194
12 Civilian personnel benefits	58
13 Benefits for former personnel	0
21 Travel and transportation of persons	105
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	318
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	396
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	654
31 Equipment	275
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	2,000

Climate Data and Information Services: Climate Data Records (Base Funding: 0 FTE and \$10,000,000; +2 FTE and +\$8,000,000): NOAA requests an increase of 2 FTE and \$8,000,000 for a total of 2 FTE and \$18,000,000 for Climate Data Records (CDRs) to transform raw satellite data into unified and coherent long-term environmental observations and products that are critical to climate modelers and decision makers concerned with advancing climate change understanding, prediction, mitigation and adaptation strategies, policies, and science.

Proposed Actions

This change funds 2 critical activities needed to support the Nation's climate science and services:

1. POES & GOES Multi-satellite CDRs - Builds multi-decadal, historical climate information records required by scientists to detect, assess, model and predict climate change, and by decision-makers to devise effective strategies to respond, adapt, and mitigate the impacts of climate change.
2. JPSS Climate Raw Data Records (C-RDRs) – Assures quality and repackages raw JPSS data for climate re-use (e.g., ocean color and temperature, clouds, sea ice, aerosols, ozone) to ensure NOAA archives capture and disseminate credible information to support private/public decision-makers and scientists.

Major CDR development and production actions include:

- Algorithm Development, Processing and Re-Processing of POES/GOES/NPP/JPSS/Jason-series Data
- Calibration, Validation and Characterization of Data
- Science and Climate Information Records
- Long-term Stewardship (ensure CDRs are easily understood, accessible and of highest quality possible)
- Applications for Climate Change Mitigation and Adaptation, and
- Project Management Support

The Program is primarily executed through competitive grants, NOAA Cooperative Institutes, and contracts. Competitive grants are utilized to capture the best community algorithms and adapt them for all past/future data sets. NOAA Cooperative Institutes are used to provide scientific research expertise in support of CDR development. Contracts are utilized for product processing and maintenance. The budget request includes essential IT infrastructure and labor costs for two FTE in FY 2012. The Program leverages prior U.S. investments by transitioning research products from NASA and other agencies into sustained NOAA operations.

Statement of Need and Economic Benefits

The CDR Program addresses NOAA's Strategic Goal to "Understand climate variability and change," and the NOAA Climate Goal's mandate to "provide comprehensive observations, data and analysis systems, climate data records ...which can address the current state of the climate at the accuracies and resolution required by the users; [and] to provide capability to assimilate large and complex data sets into Earth systems models..."

CDRs are distinct from operational weather/hazard satellite products since CDR production:

- Removes/minimizes time dependent errors and biases in satellite data

- Delivers long term, seamless, homogeneous records (50+ years) characterizing climate change/variation
- Reprocesses the entire period of record as new climate algorithms or sensor knowledge is developed

NOAA's CDR processing capability enhances satellite data to have significant use and value for climate studies because they provide the long-term data series needed to study climate variability. The US GEO/GEOSS, USGCRP/CCSP (2003), WMO/GCOS (2003), and National Academy of Sciences (2004; 2006) have called for a sustained CDR program. The IPCC's 4th Assessment Report (2007) underscores the urgent need for these data. Key NOAA constituents, including national defense entities and major private sector industries such as insurance, agriculture, energy and transportation have increasingly called for authoritative climate reference data upon which to base investments and strategic plans (e.g., NOAA Data and Information for a Changing Climate: A Conference for Public and Private Sector Users, Asheville, 2007).

NOAA's CDR Program is initially focused on critical CDRs that address key societal issues including:

- Water, drought, floods
- Energy, renewable energy
- Hurricanes, coastal hazards

Improved knowledge in these areas translates into lives and property protected or saved.

Deliverables

Execution requires incremental CDR starts over a long period due to the large work volume. Major annual milestones are:

FY 2010: 3 CDRs produced operationally and 7 CDRs in development

FY 2011: 8 CDRs produced operationally and 8 CDRs in development

FY 2012: 14 CDRs produced operationally, 4 CDRs in development, start transitioning to NPP satellite

FY 2013: 18 CDRs produced operationally, and continue transitioning to NPP satellite input

FY 2014: 20 CDRs produced operationally, and start transitioning to Joint Polar Satellite System satellite and GCOM-W inputs

FY 2015: 22 CDRs produced operationally and continue transitioning to Joint Polar Satellite System satellite, TSIS free-flyer and GCOM-W inputs

FY 2016: 24 CDRs produced operationally and begin transitioning to GOES-R satellite input

Performance Goals and Measurement Data

Performance Measure:	FY	FY	FY	FY	FY	FY
# of CDRs transitioned to NOAA Operations (Cumulative)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Increase	8	14	18	20	22	24
Without Increase	8	11	13	13	13	13
Description: The increase will continue transforming raw satellite data into unified and coherent long-term environmental observations and products that are critical to climate modelers and decisions makers concerned with advancing climate change understanding, prediction, mitigation and adaptation strategies, policies, and science.						

PROGRAM CHANGE PERSONNAL DETAIL

Activity: Observations & Monitoring
 Subactivity: Climate Data & Information Services

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
IT Specialist	Asheville, NC	ZP-III	1	57,408	57,408
Physical Scientist	Asheville, NC	ZP-IV	1	81,823	81,823
Management & Program	Asheville, NC	ZP-IV	1	81,823	81,823
Total			<u>3</u>		<u>221,054</u>
less Lapse		25%	<u>1</u>		<u>55,264</u>
Total full-time permanent (FTI)			2		165,791
2011 Pay Adjustment (0%)					0
2012 Pay Adjustment (0%)					0
TOTAL					<u>165,791</u>

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employr	
Full-time permanent	2
Other than full-time permanent	0
Total	<u>2</u>

Authorized Positions:

Full-time permanent	3
Other than full-time permanent	0
Total	<u>3</u>

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Observations & Monitoring
Subactivity: Climate Data and Information Services

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$166
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	166
12 Civilian personnel benefits	52
13 Benefits for former personnel	0
21 Travel and transportation of persons	31
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	544
24 Printing and reproduction	0
25.1 Advisory and assistance services	1,659
25.2 Other services	1,150
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	72
31 Equipment	365
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	3,961
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	8,000

Ocean Data and Information Services: Coastal Data Development (0 FTE and + \$38,000):

NOAA requests an increase of 0 FTE and \$38,000. This increase is requested to support existing program requirements within this subactivity that were not provided for in the Consolidated Appropriations Act, 2010. Specifically, NOAA requests funds to support increased utilization of coastal and oceanographic data using web-based search/access and geographic information system (GIS) techniques to improve the understanding, management and use of coastal areas.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Observations & Monitoring
Subactivity: Climate Data and Information Services

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	38
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>38</u>

Climate Data and Information Services: Climate Database Modernization Program (Base Program 10 FTE and \$4,063,000; -0 FTE and -\$17,116,000): NOAA requests a decrease of \$17,116,000 and 0 FTE for a total of \$4,063,000. In the Consolidated Appropriations Act, 2010, Congress provided additional funds for State specific projects in West Virginia, Kentucky, and Maryland to preserve, image and digitize historic climate records from paper, microfilm and other sources. With these additional funds NOAA accomplished the following: the printing and distributing of the NCDC serial climate publications, imaging and keying incoming records, hosting and maintaining online images, and rescued and preserved historic climate data essential to improving real-time monitoring and forecasting of environmental, solar, and geophysical events. This additional amount is not required in FY 2012 because the requested funding level is sufficient to continue to preserve and make available the highest priority data needed by the scientific and business communities.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Observations and Monitoring
Subactivity: Climate Database Modernization Program

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	-14
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	-17,102
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>-17,116</u>

Congressionally Directed Projects (Base Funding: 0 FTE and \$8,945,000; Program Change: -0 FTE and -\$8,945,000): NOAA requests a decrease of \$8,945,000 to terminate the funding level that would continue under an annualized FY 2011 continuing resolution associated with the Congressionally directed projects identified in the Conference Report that accompanied the Consolidated Appropriations Act. 2010.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Observations and Monitoring
Subactivity: Climate Database Modernization Program

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	-51
22 Transportation of things	-2
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	-186
24 Printing and reproduction	0
25.1 Advisory and assistance services	-616
25.2 Other services	-1,516
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	-1,957
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	-210
31 Equipment	-800
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	-3,607
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>-8,945</u>

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APPROPRIATION: PROCUREMENT, ACQUISITION, AND CONSTRUCTION

SUBACTIVITY: CLIMATE RESEARCH PROGRAMS

The objective of this subactivity is:

- To provide sustained capability of the NOAA Research and Development High Performance Computing System to advance climate science and accelerate the development of regional and sub-regional information products and services..

NOAA’s Research &Development High Performance Computing System (R&D HPCS) provides computational resources to support advances in environmental modeling crucial for understanding some of the most critical climate issues of today. This investment includes the supercomputing systems, associated storage devices, advanced data communications, security, and necessary data center space. NOAA’s R&D HPCS leverages world-class research staff and modeling capabilities now in place at NOAA to address important research problems in climate and weather research. NOAA’s on-going model development is advancing the climate research program through NOAA computational research and collaboration with the inter-agency and academic climate research community. The American Recovery and Reinvestment Act funding enhanced NOAA’s R&D HPCS, accelerating NOAA’s capabilities to provide climate information to decision-makers at regional and state levels.

Deliverables/Outputs:

- Sustained high availability of the NOAA R&D High Performance Computing system
- Improved credibility of projections of changes of important climatic quantities, such as regional climate change and extreme events, to allow society to efficiently plan for and adapt to climate change.
- Major contributions of model data to the Program for Climate Model Diagnosis and Intercomparison, in support of national and international climate assessments.
- Capability to develop and provide decadal prototype forecasts and predictions made with high-resolution coupled climate model.

Performance Goals and Measurement Data

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Cumulative number of new decadal prototype forecasts and predictions made with high-resolution coupled climate models	1	2	3	4	5	6
Description: One of the goals of this activity is to develop new prototype forecasts and predictions on decade time-scales for climate changes and impacts such as sea level rise, Arctic climate impacts, and rapid climate change. These forecasts and predictions are dependent on the development of state-of-the-art climate models.						

Research Supercomputing	FY 2011 & Prior**	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	CTC	Total
Change from FY 2012 Base								
Total Request	274,402	10,379	TBD	TBD	TBD	TBD	TBD	TBD

Program Changes for FY 2012:

No program changes for this subactivity.

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APPROPRIATION: PROCUREMENT, ACQUISITION, AND CONSTRUCTION

SUBACTIVITY: CLIMATE OBSERVATIONS AND MONITORING

The objectives of this subactivity are:

- Improved confidence in the monitoring and detection of national and regional climate variation and change.
- Comprehensive documentation of the State of the Climate.
- Enable policy makers and resource managers to make informed policy and business decisions using integrated climate observations, information, products, and other services.
- Easy and convenient access by NOAA and its customers to new and historical national and global observations and climate data and information records that meet rigorous scientific standards for quality.

REGIONAL U.S. HISTORICAL CLIMATOLOGY NETWORK (RUSHCN)

The Regional U.S. Historical Climatology Network (RUSHCN) will sustain the Nation's climate record of surface atmospheric measurements essential to monitor and assess regional climate variation and change. The desired outcome is to reduce the uncertainty in the measurement of regional climate variation and change, and provide a more reliable, maintainable and expandable surface observing network to meet future needs. The modern, state of the art, RUSHCN will also provide expansion capability to allow the collection of other data in the future, such as soil temperature, soil moisture, relative humidity, and snow measurements. The National Weather Service (NWS) reviewed the current ~1,200 COOP Historical Climatology Network sites for the appropriateness for climate purposes and determined that only 70 of the 1,200 sites meet the Climate Observing Classification Scheme Criteria for rating a station's adequacy for monitoring climate.

Data from this network will contribute to programs across NOAA and is an integral contribution to the National Integrated Drought Information System (NIDIS) requirements. In addition, the network will contribute to U.S. Integrated Earth Observation System (IEOS) and the Global Earth Observation System of Systems (GEOSS) concept of operations by improving the design and integration of regional climate observation stations.

RUSHCN data will extend the historical U.S. Historical Climatology Network data record into the future preserving the Nation's long term climate record (extends back at least 80 years and more). At a time when quality climate data is becoming increasingly important for understanding climate variability and change, the continuity of the existing regional data set is threatened due to degraded siting, equipment obsolescence, data quality, and reporting vulnerabilities. Much of the USHCN, currently used for regional and local climate monitoring, relies on manual observations and reporting subjecting the Nation's climate record to error, reporting delays, and potential loss.

The NRC 1998 and 1999 reports, "Future of the NWS Cooperative Observer Network" and "Adequacy of Climate Observing Systems," along with national media reports underscore the need for a network of modern equipped stations to record and report an accurate regional climate signal. The Regional Climate Centers (RCCs) and state Climatologists have reported a significant increase in requests for Regional climate products. RUSHCN will provide the ability to scientifically measure, monitor, and assess regional climate change.

EOS ADVANCED POLAR DATA PROCESSING, DISTRIBUTION, AND ARCHIVING

NOAA is committed to preserve the NASA Earth Observing System (EOS) data per NOAA's long-term management agreement with NASA. The Earth Observing System (EOS) & Advanced Polar Data Processing, Distribution and Archiving System support is directed toward the NOAA CLASS Development project. It takes the NASA EOS data requirements for archive and access and provides funding to ensure the CLASS Development team designs and engineers the appropriate capabilities and capacities into the CLASS Operating System. The EOS Advanced Polar Data Processing, Distribution and Archiving System data requirements for archive and access funding is used by the CLASS Development team to ensure the appropriate design and engineering capabilities and capacities are incorporated into the CLASS Operating System. NOAA is currently responsible for the stewardship of over three petabytes of environmental data and information, which is expected to grow to well over 14 PBs in FY 2012. NOAA spends more than one billion dollars each year collecting environmental data in support of its mission. NOAA is scheduled to launch the NPOESS Preparatory Project (NPP) satellite in FY 2011 followed by the first launch of Joint Polar Satellite System satellite scheduled in FY 2016. The environmental data generated will be a 100-fold increase in data volume per satellite. NOAA will use the funds to procure additional media storage hardware and telecommunications to safely store and provide access to NASA EOS data.

DATA CENTER MODERNIZATION

This activity is associated with the Information Technology Facilities and Infrastructure Refresh activities at the three NOAA Data Centers. This support is critical to keep the NOAA Data Centers' access and customer services management IT infrastructure compatible with the CLASS Operations System that has been integrated into the data centers' infrastructure and operations.

COMPREHENSIVE LARGE ARRAY DATA STEWARDSHIP SYSTEM (CLASS) – DEVELOPMENT

CLASS is the NOAA Enterprise System IT capability for the Data Centers, acting as a web-based data storage and distribution system for NOAA's environmental data. It is currently utilized by the CS Data Centers for the distribution of operational environmental satellite data from NOAA's Geostationary and Polar (GOES and POES) operational satellites and derived data products. CLASS is under development to support additional satellite data streams, such as GOES-R, NPP, and JPSS. In addition, NEXRAD and modeled data are planned for inclusion in CLASS and the system is being evolved to provide a configurable set of tools for data ingest to allow rapid response to new requirements, additional tools for data management and stewardship by data center experts, and generalized access interfaces to allow tailored tools for data access. In the near term, efforts will focus upon operations and maintenance of CLASS components that have transitioned from development to operational status. Longer-term plans for CLASS include expanding the safe storage/access capacity to meet the data influx expected from the operational introduction of data from radar, models, and new satellites. The current CLASS configuration can provide services for approximately four PBs of data, so significant hardware investments will be necessary in the coming years to accommodate the increase in observational data and model outputs. Management of these data can be accomplished only through rapidly expanding storage capacity at the Data Centers and automating the means of data ingest, quality control, and access through phased systems procurement. The early implementation of this archive and access system has paved the way to accommodate additional massive data volumes from the Earth Observing System Satellites.

Data Center Modernization

Deliverables

- Sustained operations and maintenance of Data Center IT infrastructure systems to ensure compatibility with CLASS operational components at the Data Centers including: operating systems, processing, metadata systems, customer services systems (web access, browse, retrieval data), information technology security, communications, and training. Introduction of future IT infrastructure components and upgrades.
- Improved/ensure user access to the current and future generations of NOAA data and information.

CLASS Development

Deliverables

- Safe Storage and Access Capability/Capacities “just in time” ready to meet phased-in introduction of new major observing systems (Satellites, Radars, Model Data, Other)
- Long-term, safe storage that meets the NOAA Data Centers’ legislative requirements.

Performance Goals and Measurement Data

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Number of regions with all RUSHCN stations installed. (Cumulative Total Regions out of 9)	1 of 9	1 of 9	1 of 9	2 of 9	2 of 9	2 of 9
Description: The performance measure indicates the improved ability to detect regional trends in annual precipitation as small as (10%/century) and annual average surface air temperature as small as (0.5 degrees C/century) with 90% or greater confidence. (Cumulative Total Regions out of 9). RUSCHN represents the second phase of a U.S. climate observing modernization program that expands the Nation’s capability to provide accurate and reliable U. S. regional climate monitoring. This program ensures improved confidence in U. S. regional climate trend analysis of temperature and precipitation, while also contributing to global climate monitoring and weather forecasting.						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Measure 1: CLASS Development System components integrated into the Data Centers’ operational architecture (CLASS Operations System) ready to support NEW Satellite Launches/RADAR DP and PH Upgrades, Model Data, etc. (Cum # systems CLASS Ops System ready to support)	7 NPP	7	7	8 JPSS	9 GOES-R	9+
Measure 2: Annual Increase - New Data/Year (TB/FY)*	5,458	5,978	6,237	6,437	8,067	9,859
Measure 3: Cumulative Total Data (Terabytes - TB)*	8,839	14,816	21,053	27,490	35,557	45,416

Description: Measure 1 measures the cumulative number of systems ready to be supported by the CLASS Ops System. Measure 2 measures the annual increase of new data measured in terabytes per year. Measure 3 measures the cumulative total data measured in terabytes.

* Safe Storage and Access Capability and Capacity (Volumes are only for One Copy/One Site) Mapped against Aug 09 Satellite "Fly Out" Plan, Radar Upgrades, Model Data, Other Data

Data Center Modernization	FY 2011 & Prior**	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	CTC	Total
Change from FY 2012 Base								
Total Request	17,076	2,846	TBD	TBD	TBD	TBD	TBD	TBD

EOS & Advanced Polar Data Processing, Distribution, & Archiving Systems (PAC)	FY 2011 & Prior**	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	CTC	Total
Change from FY 2012 Base								
Total Request	13,342	990	TBD	TBD	TBD	TBD	TBD	TBD

Program Changes for FY 2012:

Regional Historical Climatology Network Modernization (Base Funding: 0 FTE and \$3,734,000; Program Change: 0 FTE and -\$34,000): NOAA requests a decrease of -\$34,000 and 0 FTE from the FY 2012 base funding level for the Regional U.S. Historical Climatology Network (RUSHCN) Modernization project. The RUSHCN base funding supports NOAA's ability to know with confidence how climate is changing regionally in the US. NOAA has found internal contract and equipment efficiencies to offset this decrease.

Performance Goals and Measurement Data

Performance Measure: Number of regions with all RUSHCN stations installed. (Cumulative Total Regions out of 9)	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Without Decrease:	1 of 9	1 of 9	1 of 9	2 of 9	2 of 9	2 of 9
With Decrease:	1 of 9	1 of 9	1 of 9	2 of 9	2 of 9	2 of 9
Description: The performance measure indicates the improved ability to detect regional trends in annual precipitation as small as (10%/century) and annual average surface air temperature as small as (0.5 degrees C/century) with 90% or greater confidence. (Cumulative Total Regions out of 9). RUSCHN represents the second phase of a U.S. climate observing modernization program that expands the Nation's capability to provide accurate and reliable U. S. regional climate monitoring. This program ensures improved confidence in U. S. regional climate trend analysis of temperature and precipitation, while also contributing to global climate monitoring and weather forecasting.						

RUSHCN	FY 2011 & Prior**	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	CTC	Total
Change from FY 2012 Base		(34)						
Total Request	23,927	3,700	TBD	TBD	TBD	TBD	TBD	TBD

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Observations and Monitoring
Subactivity: Historical Climatology Network Modernization

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	-34
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>-34</u>

Comprehensive Large Array Data Stewardship System (Base Program 0 FTE and \$6,476,000; -0 FTE and - \$12,000,000): NOAA requests a decrease of \$12,000,000 and 0 FTE, for a total of \$6,476,000 and 0 FTE, for CLASS development. In the Consolidated Appropriations Act, 2010, Congress provided \$18,476,000 for the CLASS system including \$5,500,000 for system maintenance and operations, and \$12,976,000 for contracted development activities. With these funds NOAA supported the first major release of next-generation CLASS software. It allowed NOAA to implement a capability to integrated climate model data into CLASS, and supported software and hardware development, testing and transition of components from development to operations. NOAA proposes to reduce the level of contracted activity in FY 2012. Additional funding is not required because requested FY 2012 funding is sufficient for safe storage and access capability/capacities ready to meet phased-in introduction of new major observing systems (satellites, radars, model data, and others) and long-term, safe storage needs.

CLASS	FY 2011 & Prior**	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	CTC	Total
Change from FY 2012 Base		(12,000)						
Total Request	81,295	6,476	TBD	TBD	TBD	TBD	TBD	TBD

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Observations and Monitoring
Subactivity: CLASS

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	-11,930
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	-70
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>-12,000</u>

BUDGET ACTIVITY: NATIONAL WEATHER SERVICE

For FY 2012, NOAA requests an increase of \$3,097,000 and 5 FTE above the FY 2010 enacted level, after the technical transfer of programs to the new Climate Service, for a total of \$987,978,000 and 4,602 FTE for the National Weather Service. The requested funding includes \$16,764,000 in inflationary adjustments. The technical transfer associated with the creation of the new Climate Service line office includes \$14,964,000 and 47 FTE associated with the Climate Prediction Center, the management of the TAO array, and the Cooperative Observer Network Modernization.

Base Justification for FY 2012

The National Weather Service Operations, Facilities, and Research base (\$901,156,000 and 4,569 FTE) includes the following subactivities:

- Operations and Research (\$791,852,000 and 4,381 FTE) includes the operations of 122 Weather Forecast Offices (WFO) and 13 River Forecast Centers (RFC) which provide up-to-date and accurate weather forecasts and warnings to the Nation.
- Systems Operation and Maintenance (\$103,079,000 and 188 FTE) includes the operation of systems such as NEXRAD, the Automated Surface Observing System (ASOS) and others that collect the observations necessary to provide weather forecasts and warnings.

The National Weather Service Procurement, Acquisition, and Construction base (\$100,489,000 and 29 FTE) includes the following subactivities:

- Systems Acquisition (\$86,489,000 and 29 FTE) includes the NEXRAD Dual Polarization upgrade project, which will upgrade the NEXRAD radar system and NWS' operational High Performance Computing capability, which is used to run all of NOAA's operational weather models.
- Construction (\$0 and 0 FTE) is to include upgrades and improvements to NOAA's Weather Forecast and Weather Service Offices (WSO).

The National Weather Service (NWS) (<http://www.weather.gov/>) provides weather, water, and climate forecasts and warnings for the United States, its territories, adjacent waters, and ocean areas for the protection of life and property and the enhancement of the national economy. NWS data and products form a national information database and infrastructure, which can be used by the public, other governmental agencies, the private sector, and the global community.

NWS is a world-class science-based team of professionals who work together to provide the best weather, water, and climate information in the world by:

- Producing and delivering reliable information;
- Incorporating proven advances in science and technology;
- Measuring, reporting, and evaluating our performance;
- Issuing forecasts to help reduce weather- and water-related fatalities; and
- Working with others to make the weather, water, and climate enterprise more effective.

NWS is dedicated to serving the American public by providing a broad spectrum of weather, climate, and hydrological forecast guidance and decision support services. NWS strives to meet

society's need for weather and hydrological forecast information. As more sectors of the economy recognize the impacts of weather and water on their businesses, they are becoming more adept at using sophisticated weather and water information to improve commerce. According to the American Meteorological Society, weather is directly linked to public safety, and a significant portion of the United States economy is weather-sensitive. Concern for public safety drives NWS to improve the timeliness and accuracy of warnings for all weather-related hazards. To do so, NWS weather and water predictions need to be at the limits of what science, technology, and a highly trained workforce can deliver.

NWS is committed to expanding these limits by enhancing observation capabilities; by improving data assimilation that effectively uses all the relevant data NWS and others collect; by improving collaboration with the research community through creative approaches such as community modeling; by rapidly transforming scientific advances in modeling into improved operational products; by improving the techniques used by our expert forecasters; by making NWS information available quickly, efficiently, and in a useful form (e.g., the National Digital Forecast Database); by including information on forecast uncertainty to help customers make better-informed decisions; by taking advantage of emerging technologies to disseminate this information; and by maintaining an up-to-date technology base and a workforce trained to use all of these tools to maximum effect.

The weather and water enterprise is larger than NWS. NWS depends on partners in the private, academic, and public sectors, starting with other line offices within NOAA to acquire data, conduct research, provide education and training, help disseminate critical environmental information, and provide advice to make best use of NWS information. NWS strives to work more closely with existing partners. NWS also seeks to develop new partnerships to achieve greater public and industry satisfaction with our weather and water information and to honor our commitment to excellent customer service.

NWS Weather and Hydrological Activities

- Increased accuracy in forecasting and lead time in warning for severe weather.
- Saved lives and property through more accurate and timely severe weather prediction.
- Increased satisfaction with and benefits from NOAA information and warning services, as determined by surveys and analysis of emergency managers, first responders, natural resource and water managers, public health professionals, industry, government and the public.
- Improved effectiveness of NOAA's current observing systems.
- Increased number of observations obtained and used from partners, both international and domestic.
- Increased number of observations archived, available, and accessible.
- Increased number of new multi-use observing systems deployed.
- Increased number of forecasters trained in the newest techniques.
- Increased volume of forecast and warning information formatted to clarify the uncertainty of an event (e.g., space weather, air quality, water and weather forecasts).
- Improved performance of NOAA's weather and water, air quality, and space weather prediction suite.
- Increased number of favorable scores on public surveys of citizen knowledge about appropriate actions under hazardous weather and water related conditions.
- Increased percentage of the public reporting timely receipt of warnings as measured by public surveys.

- Increased number of communities with plans in place to act on weather warnings and to reduce the impacts of severe weather.
- Increased community knowledge of, use of, and satisfaction with NOAA information that supports local air quality monitoring and forecast programs.
- Increased assistance to international partners to improve response capabilities to weather and water predictions.

NWS places an increasing emphasis on weather-related events which significantly affect people, their livelihoods and the economy. NWS strives to promote the Nation's commerce by providing information supporting society's ability to take preventive actions so that people remain safe; less damage is done to communities, businesses, and the environment; and economic productivity is maximized. NWS services are critical to the safe and efficient transportation of people and goods by sea, air and over land. The transportation and public utility sectors are a vital component of the U.S. economy and are highly vulnerable to weather and climate events. NWS will work to provide aviation forecast improvements to help mitigate air traffic delays and reduce weather-related aviation accidents; improve precipitation and water resource forecasting, which affects surface transportation; and improve ocean and wind forecasting, which affects sea-borne transport from the high seas to our coasts and the Great Lakes. NWS is committed to working with our partners to continue improving weather information services in support of all modes of transportation and commerce.

NWS Activities in support of commerce

- Increased safety and productivity of transportation systems by providing relevant observations, warnings and forecasts of weather events impacting the transportation sector.
- Increased reliability, frequency, and use of marine, aviation, and surface transportation-related observations.
- Increased accuracy and use of weather and marine forecasts to increase efficiency of all land, water and air transportation systems.

NWS operates and maintains critical infrastructure which enables the provision of NOAA's services to the Nation. NWS manages a distributed network of offices that span the Nation, delivering essential NOAA services, especially those related to high-impact events, at the local level where critical, life-saving decisions are made. This includes the management of all major weather observing systems, from software engineering and communications to facilities and logistical planning. NWS also ensures worldwide acquisition and delivery of weather and water data through the Telecommunications Gateway and NOAAnet. In support of NOAA's operational forecasting mission, NWS develops, improves and monitors data assimilation systems and models of the atmosphere and oceans, using advanced methods developed internally as well as cooperatively with scientists from universities, NOAA laboratories, other government agencies, and the international scientific community.

NWS' enabling infrastructure

- Ensure the reliability and integrity of NOAA's operational weather and water observing and prediction systems and services.
- Determine the optimal mix of observations, in terms of spatial and temporal resolution and data type, to advance NOAA's numerical modeling capabilities.

Proposed Reorganization to establish a Climate Service line office:

The National Weather Service (NWS) proposes to transfer two climate-focused observing systems (the TAO array, and the Regional US Historical Climatology Network) and the Climate Prediction Center (CPC) to the Climate Service. The transfer of the observing systems will allow consolidation of NOAA's climate observing assets under the same management. The transfer of CPC will provide continuity between NOAA's short and long-term climate prediction capabilities. NWS will continue to work with CS and CPC to ensure continuity between long-range weather forecasts and short-term climate predictions.

Research and Development Investments:

The NOAA FY 2012 Budget estimates for its activities, including research and development programs, are the result of an integrated requirements based strategic planning process. This process provides the structure to link NOAA's strategic vision with programmatic detail and budget development, with the goal of maximizing resources while optimizing capabilities. NWS requests \$34,086,000 for investments in R&D and infrastructure to support R&D in the FY 2012 Budget.

NOAA's strategic planning process makes specific reference to the objectives and milestones outlined in the NOAA 5-Year Research Plan for 2008-2012. The strict management of planning against these investment criteria, objectives, and milestones leads to NOAA budget proposals that reflect the research and development needs of the organization. The NOAA Research Council - an internal body composed of senior scientific personnel from every line office in the agency - is tasked with developing the 5-Year Research Plan, and provides corporate oversight to ensure that NOAA's research activities are of the highest quality, meet long-range societal needs, take advantage of emerging scientific and technological opportunities, and shape a forward-looking research agenda.

Significant Adjustments-to-Base (ATBs):

NOAA requests a net increase of \$16,764,000 and 1 FTE to fund adjustments to current programs for NWS. The increase will provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Service Administration (GSA).

NWS also requests the following transfers for a net change to NOAA of \$0 and 0 FTEs.

From Office	Line	To Office	Line	Amount (\$000)/ FTEs
NWS	Local Warnings & Forecasts	CS	Observations & Monitoring - Ocean Observations	\$4,300/ 0 FTE
NWS	Cooperative Observer Network Modernization (NERON)	CS	Observations & Monitoring - Historical Climatology Network Modernization (PAC)	\$3,734/ 0 FTE
NWS	Climate Prediction Center (CPC)	CS	Observations, Monitoring, and Prediction	\$6,930/ 47 FTE
Total NWS				\$14,964/ 47 FTE

NWS requests a technical adjustment to move \$14,964,000 and 47 FTEs from NWS to the Climate Service (CS). These funds will be used to support the formation of the new CS line office.

From Office	Line	To Office	Line	FTEs
NWS	Cooperative Observer Network Modernization (NERON)	NWS	Local Warnings & Forecasts	2
Total NWS				2

In addition, NWS requests a technical adjustment to move 2 FTEs from the Cooperative Observer Network Modernization (NERON) PAC PPA to the Local Warnings & Forecasts ORF PPA. These FTEs will continue to support the Regional US Historical Climatology Network (formerly the Cooperative Observer Network Modernization (NERON) program) of the Climate Service.

From Office	Line	To Office	Line	Amount (\$000)
NWS	Weather Forecast Office Construction	NWS	Local Warnings & Forecasts	\$3,504

NWS requests technical adjustments to transfer \$3,504,000 from the Procurement, Acquisition, and Construction (PAC) Weather Forecast Office Construction line to the Operations, Research, and Facilities (ORF) Local Warnings and Forecasts line. This realignment will facilitate NWS managing all Weather Forecast Offices leases out of Operations, Research, and Facilities funds.

Other Adjustments:

The NOAA FY 2012 Budget for NWS also requests other adjustments in the amount of \$9,426,000 to restore funds related the Promote and Develop (P&D) account as provided in the FY 2011 annualized Continuing Resolution. The P&D transfer represents funds derived from

duties on imported fisheries products and are transferred to NOAA from the Department of Agriculture. The annualized FY 2011 Continuing Resolution provided \$36,056,800, including carryover, less than requested in the budget due to a downturn in the international fisheries markets. To address a difference between estimated and actual transfer amounts, NOAA has spread the reduction to each of its seven line offices, taking a 1.06 percent reduction to each PPA. With this adjustment, NOAA seeks to restore ORF amounts for NMFS back to the requested amount.

From Office	Line	To Office	Line	Amount
NWS	All	NWS	All	\$9,426,000

Administrative Cost Savings:

The Administration is pursuing an aggressive government-wide effort to curb non-essential administrative spending called the Administrative Efficiency Initiative (AEI). In order to be good stewards of taxpayer money the Federal Government should continue to seek ways to improve the efficiency of programs without reducing their effectiveness. As such, the President directed each agency to analyze its administrative costs and identify savings where possible. After reviewing its administrative costs, the National Weather Service (NWS) has identified \$13,285,000 in administrative savings. NWS has targeted a number of areas to achieve these savings, at both the Line Office Headquarters level and throughout the program offices. Using NOAALink, the National Weather Service anticipates saving money through more strategic sourcing of products and services. Consolidation of products will enable buying in bulk to reduce prices. Consolidation of services will also result in dollar savings by reducing the number of contracts to be managed. In the area of human capital, NWS expects to reduce its costs by canceling some planned hires, downgrading some positions, and working to reduce its workers compensation costs. Administrative savings in the area of logistics plans and in general administrative support have been identified by limiting of the use of overnight mail services as well as consolidating services through a single provider. NWS has also identified savings tied to IT related items, primarily through delaying the refresh of computer equipment and eliminating redundant software licenses. In addition, NWS expects to reduce costs through business process reengineering. The \$13,285,000 in administrative savings identified above reduces NWS' funding requirement in FY 2012. These saving are reflected in the request.

Headquarters Administrative Costs:

In FY 2012, NWS headquarters will use \$20,903,700 after instituting planned savings as a result of the AEI mentioned above to support general management activities, financial and budgeting, and IT related expenses, as well as supporting facilities and other general operating costs. These funds also include support for service contracts, utilities, and rent charges from the General Services Administration. As part of the AEI, NWS has reviewed its Line Office Headquarters costs and will be able to reduce previously planned costs by \$1,850,000. Specifically, NWS will use headquarters administrative funds to support the following:

Headquarters Program Support Type	Description	FY 2012 Amount	FY 2012 FTE associated with NWS Line Office HQ
General Management & Direction	Includes Assistant Administrator's office, public affairs, information services	\$7,467,050	30.0
CFO Operations	Includes Budget, Finance and Accounting	\$6,230,250	25.0
CIO Operations	Includes IT-related expenses and other CIO related activities	\$2,423,400	17.0
CAO Operations	Includes Facilities and Security costs, as well as other CAO related activities	\$4,232,700	10.0
Human Resources	All HR services, including EEO	\$2,400,300	14.0
Total Before AEI Savings		\$22,753,700	96.0
<i>AEI Savings</i>		<i>(\$1,850,000)</i>	-
TOTAL post AEI Savings		\$20,903,700	96.0

NOAA recognizes the need to improve the transparency of the policies and procedures used by its line office headquarters to bill component programs for management and administrative services. NOAA is currently re-evaluating, standardizing, and documenting these policies and procedures for each line office. Prior to the beginning of FY 2012, NOAA will publish its policies and procedures for assessing headquarters and administrative costs within the line offices on the NOAA CFO public website along with other budget and finance documents. NOAA looks forward to working with the Congress and other interested parties to increase the transparency and confidence in NOAA's financial management.

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APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH, AND FACILITIES

SUBACTIVITY: OPERATIONS AND RESEARCH

NOAA's NWS serves the people of the United States 24 hours each day. NWS is the sole official and authoritative United States voice for issuing warnings during life-threatening weather situations. NWS forecasters issue climate, public, aviation, marine, fire weather, air quality, space weather, river and flood forecasts and warnings every day for the U.S., its territories, adjacent waters and ocean areas, to protect life and property and enhance the national economy.

NWS has over 4,600 employees in 122 WFOs, 13 RFCs, 8 National Centers for Environmental Prediction (NCEP), and other support offices around the country, including 21 units collocated with the Federal Aviation Administration's (FAA) air route traffic control centers. In addition, NWS supports a national infrastructure to gather and process data worldwide from the land, sea, and air. This infrastructure collects data from technology such as Doppler weather radars, satellites operated by NOAA's National Environmental Satellite Service (NESS), data buoys for marine observations, surface observing systems, and instruments for monitoring space weather and air quality. This data feeds sophisticated models running on high-speed supercomputers. A highly trained and skilled workforce uses powerful workstations to analyze all of these data and issue forecasts and warnings. High-speed communications tie this entire information infrastructure together and disseminate forecasts and warnings to the public.

NWS staff also use trained community volunteers to enhance weather service operations. Cooperative observers collect weather data that become part of the Nation's climate records and citizen storm spotters provide NWS with visual confirmation of severe weather events. As environmental information becomes more sophisticated, complete, and available to all, the environmental literacy of the public becomes more important. NWS outreach and education activities are aimed at making sure the public understands the information we provide and can use it effectively in the decisions they make.

LOCAL WARNINGS AND FORECASTS BASE

Local Warnings and Forecasts Base includes the following activities:

Weather Warnings and Forecasts: Each year, NWS forecasters issue over 1,000 tornado warnings, 2,500 flash flood warnings, 5,000 winter storm warnings, 900,000 airport forecasts, 200,000 coastal and lakeshore marine forecasts, 50,000 fire weather forecasts and warnings, and 700 tropical cyclone/hurricane forecast and warning packages. In addition to these high-impact services, Weather Forecast Offices (WFO) deliver a comprehensive and continuous suite of forecasts and information to support a variety of users, including the general public.

Although text forecasts have been the primary means of product dissemination, NWS has been converting its forecast products to a digital, gridded format. Each WFO sends detailed, high resolution graphical forecasts for their local area to a national server to be compiled in the National Digital Forecast Database (NDFD) (<http://www.weather.gov/ndfd/>). This is a collection of sensible weather elements such as maximum and minimum temperature, humidity, cloud cover, probability of precipitation, amount of precipitation and wintry precipitation, weather type, and wind direction and speed. In addition to viewing gridded weather data via the Internet, more advanced users can decode the individual grids into a number of different output types for additional uses and automated exchanges. These capabilities have greatly increased the

audience of NDFD data, and many private weather firms quickly realized its potential benefits and have flourished by using the NDFD as a tool for composing their products.

Upper Air (UA) Observations Program (<http://www.ua.nws.noaa.gov>) provides meteorological data to support NWS forecast operations. NWS operates 92 radiosonde stations in the United States and supports 10 additional stations in the Caribbean and launches over 78,000 radiosondes from these sites each year. A radiosonde is a small, expendable instrument package that is launched by a large hydrogen or helium gas filled balloon. During its flight, the radiosonde measures and transmits profiles of pressure, temperature, and relative humidity. This data is the primary source for NWS weather prediction models used to support severe storm, aviation and marine forecasts, and also support climate and other research uses. Radiosondes serve as the benchmark for deriving estimates of temperature and moisture from satellite and ground-based thermodynamic profiler measurements.

Marine and Coastal Weather Services (<http://www.nws.noaa.gov/om/marine/marine.shtml>) encompass a vast area from inter-coastal waterways to near-shore bays and inlets to the open oceans that span much of the Northern and Western Hemispheres. The program aims to promote safe and efficient transportation in support of both commercial and recreational interests. Forecasts, analyses, watches, warnings and advisories of maritime conditions, as well as coastal and tropical hazards are provided by forty-seven coastal WFOs and three components of the National Centers for Environmental Prediction (NCEP) (<http://www.ncep.noaa.gov>). These services are provided for the coastal waters, offshore, high seas waters, and Great Lakes nearshore and open lake waters.

Using observational data sources such as buoy observations and satellite imagery, numerical model forecast guidance provided by various sources such as NCEP and the NOAA Office of Oceanic and Atmospheric Research (OAR) Great Lakes Environmental Research Laboratory, as well as analyses of ice from the National Ice Center (NIC) (<http://www.natice.noaa.gov/>), the forecasters at tropical and marine centers and coastal and Great Lakes offices maintain a continuous monitoring of weather conditions over marine zones. Routine forecast products and analyses, watches, warnings and advisories are disseminated in alphanumeric, gridded, and graphical formats to describe maritime conditions and tropical and coastal hazards. Marine and coastal products describe wind, waves, visibility, icing, coastal flooding, severe weather, high surf, and rip currents. Tropical products describe hazards associated with tropical cyclones such as storm surge, wind, waves, and inland impacts.

NWS is focused on enhanced forecaster training, increased customer outreach, and implementation of new products. One area of focus will be to educate emergency managers and all users on the strengths, limitations, and application of new tropical cyclone probabilistic wind speed products. Enhanced customer outreach and training will be provided for coastal hazards such as rip currents and high surf.

Over the next several years NWS plans to expand the NDFD to support new marine and tropical gridded products in the coastal, offshore and high seas zones. Ocean and marine gridded products in the NDFD include 6 separate Probabilistic Tropical Cyclone Surface Wind Speed grids, and Wind speed and Significant Wave Height grids in the coastal zone. In FY 2012, NWS plans to make operational the Tropical Analysis and Forecast Branch (TAFB) five day forecasts of gridded Mean Sea Level Pressure, Surface (10-m) winds and significant wave heights.

National Data Buoy Center (NDBC) (<http://www.ndbc.noaa.gov>) provides hourly observations from a network of 101 moored weather observation buoys and 48 Coastal Marine Automated

Network (C-MAN) stations. This network provides forecasters with frequent, high-quality marine observations for forecast preparation and to verify forecasts after they are produced. Other users rely on the observations and forecasts for commercial and recreational activities.

All stations measure wind speed, direction, and gusts; barometric pressure; and air temperature. In addition, all buoy stations, and some C-MAN stations, measure sea surface temperature and wave height and period. Conductivity and water current are measured at some stations as well.

To support the buoy network, NDBC's Industrial Operations and Engineering Complex has specialized equipment and provides NDBC with the environment needed to support the assembly and service of buoys and C-MAN stations. Buoy hulls are refurbished in the onsite sandblast and painting facility. Equipment integration and testing aboard the buoys are accomplished in high bays. Sensors are calibrated in wind tunnels or environmental chambers, and later tested with the onboard station microprocessors, called payloads, on test stands at the outside sensor test facility. Final calibration and testing of the completed buoy systems are accomplished in the onsite canal.

Fire Weather Services (<http://weather.gov/fire>) support national, regional and local land management agencies such as the Bureau of Land Management (BLM) and the U.S. Forest Service (USFS). NWS issues a complete Fire Weather Forecast twice daily, with updates as needed. The forecast contains weather information relevant to fire control and smoke management for the next 36-48 hours. The appropriate dispatch zones and crews use this information to plan staffing levels, equipment placement, prescribed burns conditions, and assess the daily fire danger. Once per day, NWS meteorologists issue forecasts for specific wildland observation sites for input into the National Fire Danger Rating System (NFDRS). NFDRS determines land use restrictions and informs the public of the daily fire danger via the Smokey Bear awareness campaign. The WFOs also, under a prescribed set of criteria, will determine if a Fire Weather Watch or a Red Flag Warning needs to be issued. These products alert not only the public, but other agencies that conditions are creating the potential for extreme fire behavior.

On the national level, NWS Storm Prediction Center issues assessments for one, two, and 3-8 days in advance of the development of critical fire weather patterns. These include large-scale areas that may experience critical fire weather conditions including the occurrence of "dry thunderstorms." These thunderstorms, containing little precipitation, are responsible for thousands of fires annually.

During the height of the fire season, state and federal forestry officials often request a forecast for a specific location called a "spot forecast." Spot forecasts are used to determine whether it will be safe to ignite a prescribed burn and how to situate crews during the controlling phase. In the last two years, NWS has implemented regional digital weather files to complement currently-provided spot forecasts. The weather output enables Fire Behavior Analysts to directly input weather data into their fire gridded fire weather element forecasts to be used as input into more accurate fire danger assessments. These improvements are particularly important near zones where planned communities meet the wildland forests. Recent improvements also include an improved spot forecast program, allowing spot forecast for fires, hazardous spills, search and rescue and marine/coastal incidents. In addition, NWS will continue excellent interagency relations with the wildland fire community through implementation of a new Interagency Agreement for Meteorological Services.

Upon request, NWS also provides on-scene assistance at large wildfires or other disasters, including HAZMAT incidents. Incident Meteorologists (IMETs) are NWS forecasters specially trained to work with Incident Management Teams during severe wildfire outbreaks or other disasters requiring onsite weather support. IMETs travel quickly to the incident site and then assemble a mobile weather center capable of providing continuous meteorological support for the duration of the incident. The kit includes a cell phone, a laptop computer, and communications equipment, used for gathering and displaying weather data such as satellite imagery or numerical forecast model output. Remote weather stations are also used to gather specific data for the point of interest. IMETs can be deployed anywhere a disaster strikes. There are 87 IMETs nationally with IMET equipment.

*The **Climate Services** Division (CSD)* (<http://www.nws.noaa.gov/om/csd/>) at NWS headquarters provides the strategic vision for climate services within NWS and oversees the NWS regional and local climate services programs. The regional and local offices deliver short-term climate products, information, and services (which in many cases are based on products and guidance from the Climate Prediction Center, now part of the Climate Service) and provide outreach to their customers. At the NWS Headquarters level, the division also sets NWS regional and local policies and procedures for climate prediction products, defines service and mission needs, solicits user feedback to evaluate new products and services, and approves final product design. CSD provides internal training for NWS operational field personnel, and external user targeted training and outreach on climate variability and change. CSD coordinates across NOAA lines; with federal agencies; the university community; and the private sector, and encourages collaborative arrangements among various regional, state and local climate stakeholders.

Water Resource Forecast Services extend basic NWS hydrologic forecasting services to include a Community Hydrologic Prediction System (CHPS) and provide water resource managers with localized water and soil condition forecasts. CHPS, the backbone NOAA's national water information strategy, will allow NOAA's research and development enterprise and operational service delivery infrastructure to be integrated and leveraged with other federal water agency activities and the private sector. Through CHPS, NOAA will deliver a new suite of high-resolution forecasts (including estimates of uncertainty) for stream flow, soil moisture, soil temperature, and many other variables directly related to watershed conditions, via collaboration and sharing of data and algorithms with university and private sector research groups. Furthermore, these activities will enable NOAA to deliver a national database of hydrologic analyses and predictions, and generate user-friendly Geographic Information Systems (GIS) products for monitoring floods and drought. This activity contributes to the National Integrated Drought Information System (NIDIS).

River & Flood Forecast Services are provided in the form of daily river forecasts by the 13 NWS River Forecast Centers (RFC) (<http://water.weather.gov/ahps/rfc/rfc.php>) using hydrologic models based on rainfall, soil characteristics, precipitation forecasts, and several other variables. Some RFCs, especially those in mountainous regions, also provide seasonal snow pack and peak flow forecasts. These forecasts are used by a wide range of users, including those in agriculture, hydroelectric dam operation, and water supply resources. The information is also the basis for local flood and flash flood warnings, watches, and advisories issued by the WFOs that emphasize flooding impacts depending on geographic area, land use, time of the year, and other factors.

*The **Aviation Weather Center** (AWC)* (<http://aviationweather.gov/>), located in Kansas City, Missouri, is the mechanism by which the U.S. disseminates its weather forecasts to the aviation

community under an international agreement through the International Civil Aviation Organization. The AWC provides wind, temperature, and flight hazard (e.g., icing and turbulence) forecasts for flight planning and en route aircraft operations for the U.S., the North Atlantic and north Pacific routes, and some routes in the Southern Hemisphere. In addition to the en route weather support provided for the aviation industry, the AWC also produces guidance products for use by WFOs in support of the airport terminal forecast function. Thus, the AWC discharges large-scale, global aviation functions which can be sensibly centralized, while the WFOs discharge local aviation functions based on centralized guidance provided by the AWC. AWC, along with the Space Weather Center, is one of two centers funded through Local Warnings and Forecasts.

The Space Weather Prediction Center (SWPC) (<http://www.swpc.noaa.gov/>) in Boulder, CO, provides real-time monitoring and forecasting of solar and geophysical events, conducts research in solar-terrestrial physics, and develops techniques for forecasting solar and geophysical disturbances. SWPC provides services to a broad user community of government agencies, industries, public institutions, and private individuals. These users are involved in satellite operation, space exploration, radio navigation, high-altitude polar flights, high-frequency communications, remote intelligence gathering, long-line power and data transmissions, and geophysical exploration. SWPC serves many government, industry and private-sector clients, and such end-product users as the power industry, the airline industry, satellite operators, and the National Aeronautics and Space Administration (NASA).

SWPC research scientists study the sun's electromagnetic, particle, and plasma emissions and the processes by which they affect the near-Earth space environment. SWPC takes a leading role in advocating and specifying new space-environment sensors for operational use. The SWPC, with the U.S. Air Force, jointly operates the national civilian Space Weather Operations Center. Forecasts, alerts, and warnings are provided to customers on a 24 hour-per-day, seven day a week basis. SWPC products are synthesized from over 1,400 data streams providing observations of the solar terrestrial environment, including x-ray flux, charged particles, and magnetic field changes on the sun, in interplanetary space, and at Earth.

The AWC and the SWPC are managed by NCEP, which is described under Central Forecast Guidance (CFG).

The schedule, milestones, and deliverables for SWPC are provided with the program change requested for this activity.

Schedule & Milestones:

FY 2012

- Develop integrated fire weather/incident response training curriculum, and conduct annual IMET Type 1 and IMET Types II/III Workshops.
- Maintain FX-Net operations to assure remote data access for IMETs

FY 2013

- Benchmark of user needs for NOAA's fire weather products and services and identify needed improvements
- Refine performance metrics for fire weather forecasts elements and make this information available to land management partners

FY 2014

- Procure equipment for IMETs including a total of 29 electronic theodolites, 17 additional IMET kits, and 87 replacement satellite communication platforms

Deliverables:

- CHPS fully operational
- Augment NWS fire weather distance learning suite by at least one new course annually to fully train workforce on Incident Command System
- Provide a real-time verification database of fire-weather forecast elements to land management partners.
- Develop wildland fire observing system and strategy for improving observations and data management

Performance Goals and Measurement Data

Performance Measure	FY 11 Target	FY 12 Target	FY 13 Target	FY 14 Target	FY 15 Target	FY 16 Target
Tornado Warnings Lead Time, Measure 15a	12	13	13	13	14	14
Tornado Warnings Accuracy, Measure 15a	70	72	72	72	73	73
Tornado Warnings False Alarm Ratio, Measure 15a	72	71	71	71	70	70
Flash Flood Warnings Lead Time, Measure 15b	38	40	40	40	42	42
Flash Flood Warnings Lead Accuracy, Measure 15b	72	74	74	74	76	76
Marine Wind Speed Forecast Accuracy, Measure 15g	69	70	70	70	71	71
Marine Wave Height Forecast Accuracy, Measure 15g	74	75	75	75	76	76
Aviation Forecast IFR Accuracy, Measure 15h	65	66	68	69	69	70
Aviation Forecast IFR False Alarm Ratio, Measure 15h	41	41	39	39	38	38
Winter Storm Warnings Lead Time, Measure 15f	15	19	19	19	19	19
Winter Storm Warnings Accuracy, Measure 15f	90	90	91	91	91	92

AIR QUALITY FORECASTING

The NWS Air Quality Forecast Services (http://www.nws.noaa.gov/ost/air_quality/index.htm) capability is an integrated, end-to-end forecast system that provides timely, reliable forecast guidance to accurately predict the onset, severity and duration of poor air quality. Forecast guidance consists of next-day ground-level ozone and smoke predictions, at hourly intervals and 12 km grid resolution. Forecast products are available on the National Digital Guidance Database at weather.gov, on ftp-servers at the NWS Telecommunications Gateway, and via NOAA's partner agency, the Environmental Protection Agency (EPA), which develops health-based interpretations and posts state and local community forecasts. NOAA's products meet customer requirements from federal, state, local, and public sectors with state-of-the-science information, both to assist state and local air quality forecasters who issue health-based air quality alerts for participating cities, and to provide information for people at risk from poor air quality at any time of day or night, on any day of the week, in any month of the year, in cities, suburbs, and rural areas alike.

Base funding supports the phased development and testing activities that are in progress to extend the initial ozone-based regional capability. In FY 2005, ahead of schedule, coverage expanded to cover the entire eastern U.S. In FY 2007, NWS deployed an expanded ozone forecast capability over the contiguous United States, and implemented the smoke predictions for the same domain. In FY 2008 and 2009, expansions to the smoke prediction over AK and HI were provided as experimental products, and prototype ozone predictions over AK and HI were developed. Smoke predictions were operationally deployed over AK in FY 2009 and over HI in FY 2010. Operational coverage for ozone predictions has been fully deployed over all 50 states. Development and testing of additional components needed for particulate matter (PM) forecasts is also in progress. Predictions of dust for CONUS are in advanced testing and planned for implementation in FY2011. Assimilation of real-time air chemistry observations will be incorporated into forecast models as needed for extended forecasting improvements.

Schedule & Milestones:

FY 2012 - 13

- Develop and test PM forecast capability prototype

FY 2014

- Initiate experimental PM forecast capability for the northeast U.S.

FY 2015

- Integrate PM products for the northeast U.S.

ALASKA DATA BUOYS

This program was instituted to expand the Alaskan coastal buoy network. The buoys report hourly marine weather information including wind speed and direction, air and sea temperature, atmospheric pressure, and detailed wave information such as swell height, significant wave height, period, and steepness. These buoys provide data which result in more accurate weather forecasts and warnings by providing routine near real-time meteorological and oceanographic information that was not otherwise available. Weather information transmitted by the buoys is added to the computer models that help meteorologists with long range outlooks in addition to short term forecasts and warnings.

Schedule & Milestones:

FY 2012

- Maintain Alaska Data Buoy array

COOPERATIVE OBSERVER PROGRAM (COOP)

This continued investment maintains the nationwide network of volunteer-operated weather observing sites. The COOP network began with the Organic Act of 1890. The observational data obtained from the network is critical for snow forecasts for amount, liquid to water equivalence, snow depth, precipitation type forecasts, flood outlooks, flood forecast guidance modeling, monitoring of droughts, issuing local weather forecasts, and declaration of disasters by government officials. The data from the COOP program is the only data utilized in the NWS model forecasts guidance for snow, snow depth and precipitation type. The COOP network continues to be used by NOAA to prepare national, regional, and local climate forecasts and is critical in the development of climatological normals and averages. In FY 2002, NWS began network refurbishment with the replacement of rain gauges and temperature sensors. The network's instruments require continued refreshment to ensure sustainability and accuracy. The funding provides required sustainment and modernization activities, as recommended by the National Research Council in 1998. Rain gauge refurbishment is estimated to be complete by the end of 2012.

Schedule & Milestones:

FY 2012

- Finish testing of soil moisture sensors in conjunction with USDA and NASA
- Final Fischer & Porter Rain Gauge Replacements (FPR) purchased and installed

FY 2013

- Begin purchase of wireless thermometer systems for future deployment to field as next-generation systems to replace the Cotton Region Shelters first and electronic MMTS at USHCN sites
- Purchase replacement Cotton Region Shelters for field use

FY 2014

- Purchase and installation of 300 wireless thermometer systems

FY 2015

- Purchase and installation of 300 wireless thermometer systems

FY 2016

- Purchase and installation of 300 wireless thermometer systems

Deliverables:

- Replacement of Cotton Region Shelters
- FPR project completed in 2012 with spares in stock
- Complete deployment of soil moisture sensors
- Deployment of wireless thermometer systems nationwide
- Deactivation of MMTS temperature systems at all US HCN sites

NOAA PROFILER NETWORK (NPN)

NPN is a network of 35 operational and two non-operational support Wind Profilers that were installed starting in 1988. Wind Profilers, vertical looking radars, are used across the Nation to track upper air wind profiles that detect the potential development of severe convective weather. The Wind Profilers also provide information that leads to improved forecasts of other types of dangerous weather, such as tornadoes and winter storms, and provides useful information for issuing aviation advisories, volcanic ash plumes tracking and wildfire predictions. The base program provides the operational funding for the NPN. The NPN system is going through a multi-year technology refresh and frequency conversion that is funded in the Procurement, Acquisition, and Construction account.

PACIFIC ISLAND COMPACT

The U.S. maintains a Compact of Free Association (COFA) or agreement with the Republic of the Marshall Islands (RMI), the Federated States of Micronesia (FSM), and the Republic of Palau (ROP) to provide basic government and commerce services including weather services to these island nations. The Compact provides the necessary funding to support the NWS Weather Service Offices (WSO) and associated weather warning, forecast, and observation services for these islands including WSO Majuro, RMI; WSOs Pohnpei, Yap and Chuuk of the FSM; and WSO Koror of ROP. This continued investment will also preserve critical weather observation infrastructure and services in the Pacific necessary to support core NOAA mission responsibilities in the Pacific such as aviation, typhoon, and marine forecasts; climate monitoring; and support to U.S. Navy operations.

STRENGTHEN U.S. TSUNAMI WARNING NETWORK

Strengthen U.S. Tsunami Warning Network is supported by the Pacific Tsunami Warning Center (PTWC) (<http://www.prh.noaa.gov/ptwc/>) at Ewa Beach, Hawaii and the West Coast/Alaska Tsunami Warning Center (WC/ATWC) (<http://wcatwc.arh.noaa.gov/>) at Palmer, Alaska. These centers conduct tsunami watches and issue warnings for all U.S. communities at risk. NWS collects and analyzes observational data from an international network of seismological observatories and sea level observing stations that operate on a cooperative basis. Observational data is also collected from the NOAA Deep Ocean Assessment and Reporting of Tsunamis (DART) Buoy Network. The DART Buoy Network consists of 39 deep-water buoys located throughout the Pacific Ocean, Atlantic Ocean, and Caribbean. The centers use these data to prepare watches and warnings covering all U.S. territories and states bordering on the Pacific and Atlantic Ocean Basins and disseminate them to WFOs, federal and state disaster agencies, military organizations, private broadcast media, and other facilities that can furnish warning information to the public.

In FY 2004, NWS assumed operational responsibility for the National Tsunami Hazard Mitigation Program (NTHMP) (<http://nthmp.tsunami.gov/>). The goal of the NTHMP is to ensure adequate advance warning of tsunamis along all U.S. coastal areas and appropriate community emergency response to a tsunami event. In response to the destructive Indian Ocean Tsunami, the U.S. Tsunami Warning Program (including the NTHMP) was upgraded and expanded to enhance the monitoring, detection, warning, and communications designed to protect lives and property for all U.S. communities at risk. In FY 2008, the U.S. Tsunami Warning Program achieved full operating capability. In FY 2012, the base program will be augmented by approximately \$12.7 million in additional reimbursable funding provided by the National Telecommunications and Information Administration (NTIA) from analog spectrum auction proceeds as specified by the Deficit Reduction Act of 2005.

ADVANCED HYDROLOGIC PREDICTION SERVICE

The Advanced Hydrologic Prediction Service (AHPS) is a web-based suite of river-forecast products providing new information on the magnitude and certainty of occurrence of floods or droughts, from hours to days and months before an event. Prior to AHPS, river forecasts were text products with 1, 2 and 3 day lead times and were delivered via the weather wire. Congressional funding for AHPS began in FY 2000. When implementation is complete, advanced river forecast information will be provided at 4,011 locations throughout the United States to assist emergency managers, water managers, and the general public in making decisions based on improved forecasts and the certainty of a hydrologic event.

AHPS Objectives:

- Produce more accurate forecast information incorporating advanced hydrologic science in NWS models
- Provide more specific and timely information on fast-rising floods with increased lead time
- Create new formats, including graphics, for products that are easier to understand and use
- Create more information to assess the risk to flooding, including forecast probability
- Provide products with forecast horizons two weeks or further into the future
- Increase the distribution of products using advanced information technologies (such as web-based geographic information system (GIS) formats and the internet) to provide broader and more timely access and delivery of information
- Implement partnered flood forecast inundation mapping
- Expand outreach and engage partners and customers in all aspects of hydrologic product improvement

The NWS has the primary responsibility among the federal agencies to provide advanced alerts via flood warnings and forecasts in the United States (in accordance with the Weather Service Organic Act, 15 USC 313; Inland Flood Forecasting and Warning System Act of 2002, 15 USC 313c; and NOAA Reorganization Plan No. 4 of 1970 as amended, 5 USC 1557-61, 1994). Prior to AHPS, river forecasts were provided as text products via the weather wire, primarily to emergency managers and other federal water management agencies. Through AHPS, the NWS provides forecasts to all users of hydrologic predictions and meets AHPS Objectives (see above).

Schedule & Milestones:

FY 2012

- Implement additional 343 forecast point locations

FY 2013

- Implement additional 317 forecast point locations

FY 2014

- AHPS implementation complete

Deliverables:

- Incorporate advanced hydrologic science into NWS models
- Provide more specific and timely information on fast-rising floods with increased lead time
- Deliver graphic forecast products that are easier to use
- Provide probabilistic forecasts useful to assess river level and flood risk
- Provide products with forecast horizons two weeks or further into the future
- Increase the distribution of products using advanced information technologies (such as the internet and web-based GIS formats) to provide broader and more timely access to and delivery of information; and
- Provide partnered flood forecast inundation mapping at selected locations
- Expand outreach and engage partners and customers in all aspects of hydrologic product improvement.

Performance Goals and Measurement Data

Performance Measure	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Total Forecast Locations with AHPS (#)	3070	3413	3739	4011	4011	4011
Description: Number of Forecast locations that will have AHPS capability to assist emergency managers, water managers, and the general public to make decisions based on the probability of a hydrologic event taking place.						

AVIATION WEATHER

The Aviation Weather Program is focused on improving the accuracy, timeliness and consistency of aviation weather products and services to improve the safe and efficient flow of air traffic in the National Airspace System (NAS). The program supports the Federal Aviation Administration (FAA), International Civil Aviation Organization (ICAO), and the World Meteorological Organization (WMO), as well as the aviation industry and stakeholders. In response to requirements of the international community and FAA, aviation weather products issued by NWS span the globe.

The Aviation Weather Program serves as the focal point for NOAA's role in the multi-agency Next Generation Air Transportation System (NextGen) and is the lead for NOAA's development of the NextGen 4-D Weather Data Cube Services. This virtual repository of weather information will integrate observed and forecast weather information into an automated, multi-agency, coordinated air traffic management system. Planned NextGen 4-D Weather Data Cube Services activities consist of development of the operational NextGen 4-D Weather Data Cube Services systems, establishing connectivity between legacy NWS datasets and the NextGen 4-D Weather Data Cube Services prototype, improvement of aviation forecasts, development of new forecast information and transition of these improved forecasts to operations, and enhancement of the NWS forecast process to meet NextGen Weather Initial Operational Capability (IOC) requirements.

Numerous programs contribute to NWS's aviation weather forecast and service capabilities. NWS maintains an extensive surface, upper air, and radar weather observing program and a nationwide aviation weather forecasting service capability. Aviation services are provided to FAA and other NWS customers in two general categories, which include Terminal Area Forecast (TAF) and en route area forecasts and advisories. GPRA targets for ceiling and visibility accuracy and false alarm ratio are derived from information in TAFs generated by 122 WFOs for 630 specific airports. Numerous area forecast products are provided for both domestic and international airspace, including text area forecasts, collaborative convective forecast products, AIRMETs (AIRman's METeorological Information), SIGMET (Significant Meteorological Information) weather advisories, and en route pilot guidance. These forecasts and advisories are produced by the National Center for Environmental Prediction (NCEP) Aviation Weather Center, other NCEP centers, the Alaska Aviation Weather Unit, WFO Honolulu, Hawaii, and 21 Central Weather Service Units. In addition, the AWC serves as an international World Area Forecast Center providing global aviation weather forecasts.

The acquisition and implementation of aircraft-based water vapor sensors and a variety of product enhancements and training activities are also managed from this program. All aviation weather projects support increasing and improving observation capabilities, improved forecast

products and techniques, outreach and training, operational adaptation of applied research, and verification of forecast products.

The multi-agency NextGen Joint Planning and Development Office (JPDO) developed a plan to achieve these required improvements and accommodate the expected growth in demand. A critical component of the NextGen plan is the integration of weather information into air traffic operations. To enable this integration, JPDO is calling for the creation of rapidly updated, high-resolution probabilistic weather information consistent across space and time and accessible to all NAS managers and users through a network-enabled infrastructure. This information will be produced by an enhanced forecast process, where meteorologists add value to guidance and rapidly updated gridded datasets produced by automation. This capability does not presently exist within the Federal government, and the JPDO partner agencies are depending on NOAA, as the Federal experts in the provision of weather information, to deliver it.

NOAA is legislatively mandated by Title 49 of the U.S. Code to provide weather information to the FAA. In addition, Public Law No 108-176 directs DOT, FAA, DOC, NASA and JPDO to conduct integrated planning for research to operations to support NextGen. This investment is critical to meet NOAA's obligations as laid out in the NextGen Integrated Work Plan, which calls for a NextGen Weather IOC in 2013 and full operational capability in 2022. This investment represents a coordinated effort spanning two line offices and three NOAA programs. It will require an extended investment over many years, resulting in a significant increase in weather prediction and dissemination capabilities with wide-ranging benefits across NOAA.

A significant portion of the NextGen investment will improve broader NOAA and NWS mission areas beyond aviation. Higher resolution forecast guidance driven by NextGen will enhance most NWS service areas, including fire weather, marine weather and public weather, especially the Warn on Forecast capability needed to increase NWS thunderstorm and tornado warning lead times. The IT and data services research will increase the efficiency of how NWS shares its environmental information with internal and external customers. NextGen capabilities support the Global Earth Observation System of Systems (GEOSS) requirements. More importantly, it will allow our public and private partners broader access to all NWS products and services and provide tools that will enable full exploitation of NWS data for decision support.

The schedule, milestones, and deliverables for NextGen are provided with the program change requested for this activity. Aviation Weather base schedule, milestones and deliverables are provided below.

Schedule & Milestones:

FY 2012

- Acquire additional water vapor data via aircraft observation
- Improve skill in aviation weather forecasting through training

FY 2013

- Acquire additional water vapor data via aircraft observation
- Meet WMO requirement for certification of aviation weather forecasters

FY 2014

- Acquire additional water vapor data via aircraft observation
- Improve skill in aviation weather forecasting through training

FY 2015

- Develop improved volcanic ash modeling to enhance aviation safety
- Acquire additional water vapor data via aircraft observation

FY 2016

- Acquire additional water vapor data via aircraft observation
- Improve skill in aviation weather forecasting through training

Deliverables:

- Meteorological Services to the Terminal Area capability
- Distance Learning Aviation Course (DLAC) modules 3 and 4
- Complete installation of 175 Water Vapor Sensing Systems (WVSS II) for increased granularity and greater accuracy in numerical models
- Provide daily WITI information
- Certify all aviation forecasters in compliance with WMO directives
- Improved volcanic ash model

WEATHER FORECAST OFFICE MAINTENANCE

This continued investment allows NWS to fund recurring maintenance contracts and address priority maintenance repairs. WFOs provide forecasters with modernized facilities, supporting the advanced technology systems and the provision of weather service to the public. As WFOs continue to age, the facilities require recurring and cyclic maintenance. This investment allows NWS to protect the \$250 million capital investment in its previously modernized facilities in accordance with NWS operational standards along with GSA and private industry standards.

NOAA WEATHER RADIO TRANSMITTERS BASE

NWR is one of the most efficient, reliable and cost-effective methods of disseminating severe weather watches and warnings, flash flood warnings, and other NWS products and services to NWS' constituency, including the general public and all levels of government emergency managers. It is also the only NWS dissemination system capable of reaching individual citizens at nominal cost to citizens (i.e., individual purchase of NOAA weather radio) and is the only system the Federal Communications Commission mandates that broadcast media outlets monitor as a source of public safety announcements. The United States National Response Framework, Emergency Support Function Annex #2 – Communications tasks NOAA/NWS to provide public dissemination of critical pre- and post-event information on the All Hazards NOAA Weather Radio.

The existing infrastructure of NWR has tremendous potential for communicating warnings and information about non-weather related hazards and emergencies. NWS has collaborated extensively with the Department of Homeland Security to make NWR an all-hazard warning network. The NWR national warning network infrastructure consists of over 1000 existing broadcast stations, broadcast coverage reaching 98 percent of the Nation's population, and the ability to deliver the broadcasted message to individuals monitoring their own NWR receivers. Since NWR signal enters the Emergency Alert System, monitored by television and radio license holders, NWR can reach millions of listeners and viewers.

Schedule & Milestones:

- FY 2012 National Maintenance Contract Award Option Year 1
- FY 2013 National Maintenance Contract Award Option Year 2
- FY 2014 National Maintenance Contract Award Option Year 3

- FY 2015 National Maintenance Contract Award Option Year 4
- FY 2016 National Maintenance Contract Award Option Year 5

Deliverables:

- Preventative maintenance and/or corrective action visits at 405 sites per year
- 841 Sites Logistics and Spare Parts Provisioning and LRU Repair Support

Performance Goals and Measurement Data

Performance Measure	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
NWR Transmitter Availability	96%	96%	96%	96%	96%	96%
Description: NWR transmitters broadcast 24 hours a day, 365 days a year. This measure reflects NWR transmitter broadcast time versus unscheduled off time and is calculated on a monthly basis.						

CENTRAL FORECAST GUIDANCE

The Central Forecast Guidance (CFG) Program provides an integrated suite of weather and environmental forecast guidance from the short-term through seasonal, inter-annual, decadal, and centennial time frames and specific tailored forecast products. CFG consists of six National Centers for Environmental Prediction (NCEP) (<http://www.ncep.noaa.gov>) and also funds NOAA’s Hurricane Forecast Improvement Project (HFIP). NCEP provides the backbone of NOAA’s Weather Ready Nation goal by providing expert analysis and prediction services to the local weather forecast office infrastructure. Forecasters use these services as the basis for local forecast products. The total forecast process depends critically on both NCEP products and local forecast efforts to enhance both accuracy and uniformity of service across the country. As part of the FY 2012 request, one center, Climate Prediction Center, is proposed to transfer to the new Climate Service line office.

NCEP also provides the principal means through which NOAA provides operational weather, ocean, coastal, and climate prediction services for large areas, up to and including the entire globe, to a vast assortment of domestic and international users. These services typically exceed the domain of a single WFO, and require a large supercomputer; efficiency demands that these forecasts be generated centrally. Users include numerous private weather providers, airlines, government research laboratories, media outlets, energy companies, the military, insurance and safety organizations, academic institutions, storm spotters and chasers, and various American Meteorological Society listservs.

NCEP’s science-based, service-oriented complementary centers generate environmental prediction products and three central activities supporting those services. Each center depends on the observational infrastructure, data assimilation systems, numeric modeling function, and application of model output statistics to produce value-added forecast guidance products for NWS field offices and direct users. The four centers that are proposed to be funded through CFG in FY 2012 are described below. NCEP’s two additional science-based centers, the Aviation Weather Center and the Space Weather Prediction Center, are funded through Local Warnings and Forecasts Base.

The *Storm Prediction Center* (SPC) (<http://www.spc.noaa.gov/>), located in Norman, Oklahoma, provides timely and accurate forecasts and watches for severe thunderstorms and tornadoes over the contiguous United States. The SPC also monitors heavy rain, heavy snow, and fire weather events across the U.S. and issues specific products for those hazards. The forecast products cover time scales ranging from a few hours out to eight days. Products issued from the SPC supply specific guidance to WFOs about the probability and intensity of hazardous weather occurrences.

The *Hydrometeorological Prediction Center* (HPC) (<http://www.hpc.ncep.noaa.gov/>), located in Camp Springs, Maryland, is responsible for preparing quantitative precipitation forecasts (QPF) that are used by WFOs to develop local rainfall, snow, and ice forecasts and by the Regional Forecast Centers (RFC) to develop local river and flood forecasts. The HPC provides special QPFs and coordinates with other federal agencies such as the Federal Emergency Management Agency (FEMA) during major flood events. The HPC also provides an array of analysis and forecasts of frontal systems, pressure patterns, temperature, and precipitation for use by WFOs and the private weather community.

The *Ocean Prediction Center* (OPC) (<http://www.opc.ncep.noaa.gov/>), located in Camp Springs, Maryland, discharges domestic and international meteorological products to marine interests under the International Convention for Safety of Life at Sea, to which the U.S. is a signatory. It is a central resource for marine interests operating outside the domain of coastal WFOs. The OPC provides weather and sea state warnings and forecasts for the offshore waters and high seas of the Northern Hemisphere for planning and operational purposes. Its warnings and products go directly to ships at sea via several dissemination methods, and are vital for the protection of life and property. The OPC also provides guidance for WFOs with coastal responsibilities, which extend out to nearly 100 nautical miles. Coastal WFOs have responsibility for forecasts and warnings out to that limit, while the centralized OPC has responsibility for offshore and high seas waters.

The NCEP experts in the area of tropical meteorology are concentrated at the *Tropical Prediction Center* (TPC)/*National Hurricane Center* (NHC) in Miami, Florida (<http://www.nhc.noaa.gov/>). Services provided by the TPC/NHC include advisories, watches, and warnings for tropical cyclones in the North Atlantic and eastern North Pacific oceans, the Caribbean Sea, and the Gulf of Mexico, including the portions of the U.S. coastline threatened by such storms. In addition, TPC forecasters provide aviation and marine analyses and forecast products for the same areas of responsibility. The TPC/NHC functions both to provide guidance, coordination, and tropical weather expertise to WFO forecasters and to serve users of centrally generated products.

NCEP also maintains two critical support organizations to facilitate the central forecast guidance process:

NCEP Central Operations (NCO) (<http://www.nco.ncep.noaa.gov/>) operates the NOAA Weather and Climate Operational Supercomputer, manages the model production suite upon which all NCEP services are based, the communications linking the several parts of NCEP, and NOAA's Climate Service provides operational quality assurance of incoming observations and outgoing products. NCO staff also provides central support for software development for data processing, display, interaction, and product generation. NCO is the technical transition point between the development of numerical weather and climate prediction models and their operational use by forecasters at NCEP and the WFOs. NCO staff also provides central support for software development for data processing, display, interaction, and product generation. NCO consists of

computing, communications, and software specialists, as well as meteorologists with special knowledge of numerical modeling operations. The NCO organization provides system support and maintenance, administration and other user support services on a 24-hour basis for NCEP operational computing and communications systems ensuring a secure and reliable "system of systems" infrastructure that comprises radar imaging, satellite imaging, model guidance, and sounding media used in the visualization and analysis of weather and climate information.

NCEP's Environmental Modeling Center (EMC) (<http://www.emc.ncep.noaa.gov/>) develops, enhances, and maintains complex data assimilation and numerical modeling software systems that span the globe. The computer models and other numerical forecast products developed by the EMC provide the basic guidance that meteorologists at NCEP and the WFOs use in making weather and climate predictions. EMC serves as the integrator of numerical modeling research and development performed from universities and research laboratories. EMC conducts model impact studies to validate data sets that lead to new data requirements from observing technologies (e.g., satellites, radar, etc.).

NOAA Center for Weather and Climate Prediction (NCWCP) in College Park, Maryland, is a new facility that will replace the current World Weather Building (WWB) with a new state-of-the-art facility to meet the operational requirements of NCEP, NOAA's National Environmental Satellite Service's (formerly National Environmental Satellite, Data, and Information Service) Center for Satellite Applications and Research and Satellite Services Division, and NOAA's OAR Air Resources Laboratory. NWS demonstrated positive results of co-locating its Forecast Offices with research laboratories and universities in the form of improved weather forecast performance scores; NWS hopes to see similar improvements by co-locating these NOAA offices. NOAA intends to use this model to accelerate the transfer of weather and climate research into operations, improve forecast models, and provide a focus for improving environmental satellite data assimilation. Further, co-locating the new facility in a scientific, academic setting will increase the recruitment and retention of top scientists as needed to advance NOAA's programs.

Another critical program activity within CFG is the **Hurricane Forecast Improvement Project (HFIP)**. HFIP's goals include improving the accuracy and reliability of hurricane track and intensity forecasts; extending lead time for hurricane forecasts with increased certainty; and increasing confidence in hurricane and storm surge forecasts. The HFIP provides the basis for NOAA to engage and align the other agencies and larger scientific community efforts to work towards coordinated national hurricane research needed to significantly improve operational hurricane forecast guidance. HFIP is pursuing existing science and technology innovations to develop an advanced Hurricane Forecast System (HFS); initial technology demonstrations show significant promise. HFIP development efforts also include enhanced observational strategies and improved data assimilation. Output from HFS is expected to be high quality information with associated probabilities on high impact variables such as wind speed, precipitation, and storm surge. Once operationally implemented, this guidance will be used by the NHC in their development of hurricane forecasts and warnings resulting in significantly improved response to the tropical storm and hurricane threat to coasts, contingent upon the ability to apply high performance computing.

Schedule & Milestones:

NCEP Centers

FY 2012-16

- Update model access and display websites

- Conduct regular customer/partner outreach forums
- Update product suite based on customer requirements
- Engage in training activities with international partners
- Integrate testbeds at all centers and better engage academic community in testbed activities to accelerate research into operations

FY 2014-16

- Implement model upgrades routinely
- Update product suite based on customer requirements
- Provide support to NOAA's Climate Service
- Work with National Ocean Service to expand into ecological forecasting

HFIP

FY 2012

- Implement full-scale reliability testing of High resolution GEFS/HFS
- Demonstrate performance impact of Higher Resolution GEFS/HFS

FY 2013

- Demonstrate performance impact of accelerated research and development

FY 2014

- Demonstrate performance impact of accelerated research and development

FY 2015

- Demonstrate performance impact of accelerated research and development

FY 2016

- Demonstrate performance impact of accelerated research and development

Deliverables:

- Approximately 28 million model fields a day for every forecast hour; including temperature, winds, humidity as a function of pressure
- Approximately 200 products and services from each of NCEP's service centers per day
- Continuous improvement to NOAA's operational forecast suite
- High frequency aircraft observation data sets made available to research community
- Additional improved modeling techniques delivered for evaluation at Developmental Testbed Center

Performance Goals and Measurement Data

Performance Measure	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Hurricane Forecast Track Error (48 hour), Measure 15c	87	87	87	87	84	81

Performance Measure	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Hurricane Forecast Intensity Error (48 hour), Measure 15c	13	12	12	12	11	11

Performance Measure	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Accuracy (%) (Threat score) of Day 1 precipitation forecasts, Measure 15e	30	31	32	32	33	33

Performance Measure	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
500 mb height anomaly for NCEP Global Forecast System	0.86	0.866	0.872	0.875	0.875	0.900
Description: The weather forecast skill is assessed using a scientifically accepted measure, called 500 millibarr anomaly correlation. This measure serves as a very sensitive proxy for overall forecast of lead times and accuracy of severe weather events. The Global Forecast System serves as the underpinning of NCEP's modeling suite and NCEP's services to the Nation.						

Performance Measure	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Timeliness of Delivery for NCEP's model guidance	99.5%	99.5%	99.5%	99.5%	99.5%	99.5%
Description: NCEP EMC delivers over 28 million model output fields including temperature, winds, humidity as a function of pressure per day. This model guidance is disseminated to NWS Regions and WFOs and external users. Timeliness of delivery impacts WFOs' ability to develop the forecasts with sufficient lead times to warn the public of severe weather events.						

Performance Measure	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Timeliness of Delivery for NCEP Centers' products and services	98%	98%	98%	98%	98%	98%
Description: NCEP Centers interpret model based guidance and observational information to develop a suite of forecasts and outlooks at a rate of approximately 100-200 products per day per center. Users rely on these services to inform decisions for protection of life and property and enhancement of the economy.						

PROGRAM CHANGES FOR FY 2012:

Local Warnings & Forecasts: National Data Buoy Center Sustainment (Base Funding: 40 FTE and \$24,722,000; Program Change: +0 FTE and +\$4,000,000): NOAA requests an increase of 0 FTE and \$4,000,000 for a total of \$28,722,000 to resolve sustainment gaps in the National Data Buoy Center's (NDBC) ocean observation capabilities, which include Coastal Weather Data Buoys (CWB) and Coastal-Marine Automated Network (C-MAN) stations.

Proposed Actions:

Requested funding will:

1. Provide necessary operations and maintenance (O&M) funding to repair or replace buoys that have exceeded their usable life or have been damaged or destroyed by severe weather, commercial boating accidents, or vandalism, replenish spares inventories, reduce the backlog of deferred maintenance, comply with international regulations, and return system performance to its required level.
2. Provide O&M support for 12 Congressional Earmarked buoys. Since 2002, the following 12 Congressional Earmarked buoys have been added to the network. This increase provides for the required recurring O&M funds necessary to maintain these buoys:
 - a. Six (6) buoys deployed off New England
 - b. One (1) buoy deployed off Alabama
 - c. Two (2) buoys deployed off Southern California
 - d. Three (3) buoys deployed near Hawaii
3. Redesign and procurement of new mooring and components. Funding would allow compliance with new international regulations prohibiting scuttling of plastic materials in the oceans.
4. Procure repair parts and ship time for backlogged buoy maintenance as funding permits. Remaining funding would be used to improve spares inventory and reduce the maintenance backlog.
5. Provide some funding for charter vessel contracts to supplement the diminishing availability of USCG ship time for servicing the weather buoy network.

Statement of Need and Economic Benefits:

NWS currently operates 101 moored weather observation buoys and 48 C-MAN stations. Over the last 8 years, system performance has trended downward to the current low (as of February 2011) of 66 percent data availability. This trend will continue downward to 65 percent data availability in 2011. The requested increase will provide O&M funding to support earmarked, damaged and destroyed buoys, and to comply with new international regulations. Remaining funding, if any, will be used to begin reducing the backlog of deferred maintenance.

Decreased data availability has caused large maritime data voids where no meteorological or oceanographic data is routinely sampled. This makes it difficult for NWS forecasters to make accurate and timely marine warnings and forecasts, and to measure the accuracy of their forecasts.

NDBC has witnessed an increase in buoy and C-MAN station replacements as a result of damage from severe weather, commercial boating accidents, and vandalism. New international regulations prohibiting scuttling of plastic materials in the oceans have resulted in increased operational costs. In addition, O&M funding was not provided for the 12 operational buoy and C-MAN station replacements deployed over the past 8 years.

Base Resources Assessment:

The base resource assessment is provided in the Program Summary for Local Warnings & Forecasts.

Schedule & Milestones:

FY 2012

- Conduct backlogged maintenance
- Perform preventative maintenance on earmark buoys
- Initiate procurement actions and prepare to contract for new moorings and components
- Acquire and Schedule commercial vessel service

FY 2013

- Conduct backlogged maintenance
- Perform preventative maintenance on earmark buoys
- Initiate procurement actions and prepare to contract for new moorings and components
- Acquire and Schedule commercial vessel service

FY 2014

- Conduct backlogged maintenance
- Perform preventative maintenance on earmark buoys
- Initiate procurement actions and prepare to contract for new moorings and components
- Acquire and Schedule commercial vessel service

FY 2015

- Conduct backlogged maintenance
- Perform preventative maintenance on earmark buoys
- Initiate procurement actions and prepare to contract for new moorings and components

Acquire and Schedule commercial vessel service FY 2016

- Conduct backlogged maintenance
- Perform preventative maintenance on earmark buoys
- Initiate procurement actions and prepare to contract for new moorings and components
- Acquire and Schedule commercial vessel service

Deliverables:

- Stabilized performance of the NWS/NDBC Ocean Observation System at FY 2011 level
- Reach and maintain data availability level of 80 percent
- Complete deployment of new moorings

Performance Goals and Measurement Data

Performance Measure:	FY	FY	FY	FY	FY	FY
Data availability of C-MAN and weather buoys	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With increase	65%	65%	70%	75%	80%	80%
Without increase	65%	60%	55%	50%	45%	40%
Description: Perform deferred maintenance in order to prevent additional performance degradation and to maintain the network performance to its required operating capacity.						

Performance Measure:	FY	FY	FY	FY	FY	FY
Number of quality controlled marine observations (millions)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With increase	1.60	1.60	1.70	1.82	1.94	1.94
Without increase	1.60	1.42	1.30	1.18	1.06	0.95
Description: Observations from all weather buoys and C-MAN Stations.						

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Operations, Research, and Facilities
Subactivity: Operations & Research

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	340
25.2 Other services	1,600
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	2,060
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>4,000</u>

Local Warnings & Forecasts: Global Positioning System (GPS) Radiosondes (Base Funding: 0 FTE and \$4,000,000; Program Change: +0 FTE and +\$5,042,000): NOAA requests an increase of 0 FTE and \$5,042,000 for a total of \$9,042,000 to fully fund the acquisition cost of the global positioning system (GPS) radiosondes for all 102 NOAA/NWS Upper Air (UA) observing stations utilizing GPS tracking capability and GPS radiosondes.

Proposed Actions:

Complete the acquisition of GPS radiosondes to launch at all 102 UA observing sites. The Nation's UA network provides approximately 78,000 atmospheric profiles (wind, humidity, temperature, pressure and altitude) per year from ground level to up to 60,000 feet from 92 NWS-operated sites plus 10 additional UA sites in the Caribbean Hurricane Upper Air System (CHUAS). Using the new GPS radiosondes provides a 50 percent improvement in wind measurement accuracy and a 6-fold improvement in vertical resolution. This enables unmatched ability to detect dangerous wind shear, which is hazardous to aviation and critical to hurricane formation; and enables much improved ability to define the jet stream core.

The radiosonde replacement program was initiated as a result of the 1993 Omnibus Budget Reconciliation Act (OBRA), in which the Government reallocated 5 MHz (1670-1675 MHz) to the private sector effective January 1, 1999, requiring the NWS to vacate this part of the spectrum. The GPS radiosonde meets this requirement with a new transmitter design operating in the 1675-1700MHz frequency range.

Statement of Need and Economic Benefits:

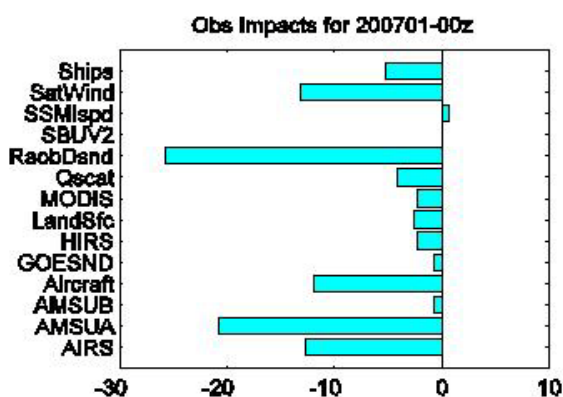
The current NWS UA operations concept, driven by National Centers for Environmental Prediction (NCEP) modeling requirements, requires an annual quantity of over 78,000 radiosondes per year to be launched at 102 sites. The cost of GPS radiosondes is significantly higher (\$160 per unit) than the legacy radio-direction finding (RDF) radiosondes (\$110 per unit).

The transition to GPS technology has resulted in significantly more, and more accurate, data from each flight. The RDF radiosondes transmit a complete observation (wind, humidity, temperature, pressure and altitude) every 6 seconds, resulting in approximately 1,100 observations per flight. GPS radiosondes transmit a complete observation every second, providing approximately 6,700 observations per flight. This is a 6-fold increase in the vertical profile data. Today's powerful computers and higher resolution models are capable of processing the increased number of observations, therefore producing more accurate forecasts.

The UA profile data received from GPS radiosondes serve as one of the principal data sources for NWS weather prediction models supporting days 2, 7, and 14 severe storm, aviation and marine forecasts and warnings. Radiosonde data are also used by the Department of Homeland Security and the Environmental Protection Agency in modeling the dispersion and mixing of hazardous materials and pollutants that are released into the atmosphere. This information is also used by policy-makers to set regulations for industrial emissions and to protect the public from hazardous levels of pollution. The Federal Aviation Administration uses radiosonde data to analyze the effects of freezing precipitation on aircraft, potentially informing aircraft design and improved safety measures for air transportation.

NOAA's upper-air network (radiosondes, wind profilers, NEXRAD, and in-flight data sensors from commercial aircraft) provides the foundation for all short-term weather predictions; the quality, timeliness, and availability of observations from this composite network directly affect NOAA's ability to meet its protection of life and property mission. Studies using NASA's GEOS-5

global numerical weather prediction model showed radiosonde observations have the most significant impact on the 24 hour weather forecast effort (see chart below) according to Rienecker, et al., 2008 in [“The GEOS-5 Data Assimilation System - Documentation of Versions 5.0.1, 5.1.0, and 5.2.0,”](#) NASA *Technical Report Series on Global Modeling and Data Assimilation*, 27. The 24 hour forecast effort has a significant impact on Winter Storm Warning Accuracy GPRA measures. UA (radiosonde) observations taken twice daily from 102 sites are the only UA observations capable of providing the independent measurement of winds, moisture and temperature at the same place and time, with a vertical resolution unmatched by any other set of observations. UA radiosonde profiles are a key element to the calibration of remote sensing systems, including all NOAA weather observation satellites. Due to their multiple measurement capability and their importance for satellite calibration, the UA observations provided by the NOAA’s modernized UA radiosonde network are critical to Numerical Weather Prediction (NWP) modeling and remain the backbone of the Nation’s global observing system.



An analysis of forecast error reduction shows radiosonde usage yields the greatest error reduction, followed by satellites (AMSUA, SatWind & AIRS) and aircraft (MDCRS).

Base Resources Assessment:

The base resource assessment is provided in the Program Summary for Local Warnings & Forecasts.

Schedule & Milestones:

FY 2010

- Begin launching GPS radiosondes at 12 additional sites for a total of 78 GPS sites

FY 2012

- Award second source contract for GPS radiosondes
- Begin launching GPS radiosondes at 8 additional sites for a total of 86 GPS sites

FY 2013

- Begin launching GPS radiosondes at 6 additional sites for a total of 92 GPS sites

FY 2014

- Begin launching GPS radiosondes at 10 CHUAS sites for a total of 102 GPS sites

Deliverables:

- Full compliance with National Telecommunications and Information Association (NTIA) frequency usage mandates at all sites
- Improved forecasts for severe storms, aviation and marine, and climate applications
- Expanded ability to inter-compare observations and model analysis products, resulting in improved data quality; improved ability to monitor rapidly changing moisture patterns

- Increased wind accuracy by an order of magnitude (10.0 m/s to 1.0 m/s at 200km downwind) at commissioned GPS radiosonde stations
- Increase vertical resolution by 6x (from 30m to 5m vertical resolution) at commissioned GPS radiosonde stations
- Improve observation vertical height accuracy from +/-1000m to +/-10m (two orders of magnitude)

Performance Goals and Measurement Data

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Number of UA observing sites launching GPS radiosondes	Target	Target	Target	Target	Target	Target
With increase	78	86	92	102	102	102
Without increase	78	78	78	78	78	78
Description: The radiosonde replacement program was initiated as a result of the 1993 Omnibus Budget Reconciliation Act (OBRA), in which the Government reallocated 5 MHz (1670-1675 MHz) to the private sector effective January 1, 1999, requiring the NWS to vacate this part of the spectrum. The GPS radiosonde complies with this requirement, and this output measure demonstrates full compliance with the OBRA.						

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
5-day 500 mb height anomaly for NWS Global Forecast System	Target	Target	Target	Target	Target	Target
With increase	0.860	0.866	0.872	0.875	0.875	0.900
Without increase	0.819	0.825	0.831	0.834	0.837	0.854
Description: The weather forecast skill is assessed using a scientifically accepted measure, called 500 millibarr anomaly correlations. This measure serves as a very sensitive proxy for overall forecast of lead times and accuracy of severe weather events. The Global Forecast System serves as the underpinning of NCEP's modeling suite and NCEP's services to the Nation. Regional scale forecasts would experience significant further degradation than experienced at the global scale, especially for severe weather events.						

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
NWP Error Reduction (joules per kilogram)	Target	Target	Target	Target	Target	Target
With increase	-19 j/kg	-21.3 j/kg	-23 j/kg	-26 j/kg	-26 j/kg	-26 j/kg
Without increase	-19 j/kg	-19 j/kg	-19 j/kg	-19 j/kg	-19 j/kg	-19 j/kg
<p>Description: This measure is based on NASA's GEOS-5 NWP model and their 2008 analysis of the impacts of various observation systems on the 24-hour forecast error. The metric is joules per kilogram, which is a measure of the amount of energy available for convection. The analysis assumes the full 102 NWS network launching two GPS radiosondes per site per day. A loss of 22 percent of the network observations results in a similar impact on error reduction, assuming a linear relationship.</p>						

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Operations, Research, and Facilities
Subactivity: Operations & Research

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	5,042
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>5,042</u>

Aviation Weather/ Next Generation Air Transportation System (Base Funding: 5 FTE and \$11,649,000; Program Change: +4 FTE and +\$26,944,000): NOAA requests a increase of 4 FTE and \$26,944,000 for a total of 9 FTE and \$38,593,000 to fund planned third year of Next Generation Air Transportation System (NextGen) development activities. This requested increase will support initial operational deployment of a 4-Dimensional (4-D) Weather Data Cube for aviation users and lay the foundation for the development of follow-on capabilities as required by the NextGen Integrated Work Plan. The NextGen 4-D Weather Data Cube will improve access and availability of observed and forecast weather information and enable its integration into an automated, multi-agency air traffic management system.

The NextGen weather capability will be implemented in three phases: The Initial Operational Capability (IOC) is due in 2014, Mid Operational Capability (MOC) in 2017 and Full Operational Capability (FOC) in 2022 which supports the broader NextGen FOC in 2025. Funding uncertainty in FY2011 has delayed the IOC date by one year and MOC date by two years, but FOC is still scheduled for completion in 2022. IOC will deliver a significantly enhanced weather infrastructure enabling improved dissemination of weather information to National Airspace System users. Between 2014 and 2017, as NextGen implements automated decision assistance tools and algorithms for managing air space, NOAA will invest resources to improve environmental modeling and human forecast tools for greater resolution, accuracy, consistency and timeliness. By FOC in 2022, NextGen weather must meet all meteorological and engineering performance requirements to support the envisioned NextGen traffic management systems. The R&D investments needed to meet these requirements will be significant, but will yield benefits across most National Weather Service (NWS) service areas, and throughout the NOAA information management enterprise.

Proposed Actions:

This planned increase to the Aviation Weather/NextGen funding line will be used to support the following activities:

1. NextGen 4-D Weather Data Cube Services and Infrastructure (\$9.0M): Software and systems prototyped in prior years will be made ready to transition from the research environment to operations. This activity will begin in FY 2012 to ensure readiness to complete Operational Testing and Evaluation and deployment of this Initial Operational Capability (IOC) as scheduled in FY 2014.
2. Integration of diverse forecasts into a consistent weather picture (\$2.3M): Develop techniques and processes to evaluate disparate forecasts of individual weather parameters and examine methods to consolidate these forecasts into a Single Authoritative Source (SAS) of weather aviation information.
3. Tools and techniques for the generation of legacy aviation products from digital sources (\$3.1M): Legacy aviation forecast products are largely text based and have been generated in essentially the same manner for the past 50 years. Tools and techniques must be developed to allow these products to be derived from digital weather information generated at NWS facilities. This capability is an essential element in the reduction of inconsistencies currently found in aviation products.
4. Expanded R&D capabilities to meet NextGen MOC requirements (\$12.7M): Initiate research and development (R&D) in advanced weather observation and prediction to meet critical NextGen MOC requirements. The focus of FY 2012 activities will be on advanced numerical weather prediction models, enhanced forecast processes and the development of tools enabling forecasters to add value to automatically generated weather information sets.

Statement of Need and Economic Benefits:

The air transportation industry is an important element of the U.S. economy and weather impacts to the National Airspace System result in significant economic losses. The industry generates 5.4 percent of America's Gross Domestic Product, \$640 billion in revenue and over 11 million jobs. The Congressional Joint Economic Committee estimates that air traffic delays cost the U.S. economy over \$41 billion in 2007, of which 70 percent are related to adverse weather. The FAA has determined that two-thirds of these weather delays are avoidable with more accurate and better integrated weather information into decision-making, potentially reducing the number of delays by 46 percent and saving \$19 billion annually (see FAA's Research, Engineering and Development Advisory Committee (REDAC) in its "*Report of the Weather-ATM Integration Working Group*" (3 Oct, 2007)). As air traffic increases, delays and the associated economic toll will only increase.

The multi-agency NextGen Joint Planning and Development Office (JPDO) has developed a plan to accommodate the expected growth in demand, which will allow for the reduction of air traffic delays. A critical component of the NextGen plan is the integration of weather information into air traffic operations. To enable this integration, the plan requires the creation of rapidly updated, high-resolution probabilistic weather information consistent across space and time and accessible to all NAS managers and users through a network-enabled infrastructure. Meteorologists will utilize and produce this information, using enhanced forecast processes to add value to forecast guidance and rapidly updated gridded datasets produced by automation. This capability does not presently exist within the federal government, and the JPDO partner agencies are depending on NOAA, as the federal experts in the provision of weather information, to deliver it.

NOAA is legislatively mandated by Title 49 of the U.S. Code to provide weather information to the FAA. In addition, Public Law No 108-176 directs the Department of Transportation (DOT), FAA, Department of Commerce, the National Aeronautics and Space Administration (NASA) and the JPDO to conduct integrated planning for research to operations to support NextGen. This investment represents a coordinated effort spanning two line offices with linkages to numerous NOAA IT, observation and service improvement projects. NOAA NextGen investments will result in a significant increase in weather prediction and dissemination capabilities with wide-ranging benefits across NOAA. The weather information in the NextGen 4-D Weather Data Cube will enhance decision-support systems by offering consistent information at high spatial and temporal resolutions. While the NextGen 4-D Weather Data Cube will be applied initially in the aviation industry, it has the potential to yield benefits to all commercial sectors that require environmental information. NOAA, other governmental agencies, private industry, and the public will have more effective and efficient access to accurate, consistent, and timely weather information to drive their decision-making systems and processes.

Base Resources Assessment:

The base resource assessment is provided in the Program Summary for Aviation Weather.

Schedule & Milestones:

FY 2012

- Critical Design Review of contractor's solution for the IOC NextGen 4-D Weather Data Cube
- 4-D Weather Data Cube contractor solution validation
- Plan for enhanced aviation forecast processes to meet emerging NextGen forecast performance requirements

- Incorporate experimental ceiling and visibility grids into NextGen Environment for Testing (NET)

FY 2013

- Contractor demonstration of 4-D Weather Data Cube solution
- NextGen registry/repository capability available
- Execute multiyear plan to enhance aviation forecast processes
- Implement the WAFC gridded forecast products for icing

FY 2014

- OT&E and deployment of NextGen 4-D Weather Data Cube IOC
- Deploy Network Enabled Verification Service (NEVS) Phase 1
- Implement high resolution models with advanced data assimilation techniques in NWS operations pending availability of High Performance Computing resources
- Enhance ensemble and probabilistic modeling techniques for aviation parameters
- Develop prototype of dynamic SAS generation

FY 2015

- Implement digital aviation services to provide consistent operational advisory and forecast products
- Extend NEVS technology for access to real-time verification information
- Develop enhanced NextGen data services infrastructure

FY 2016

- OT&E and deployment of NextGen 4-D Weather Data Cube MOC
- Implement dynamic SAS generation capabilities

Deliverables:

- NextGen Weather Capability IOC
- Network Enabled Verification System Phase 1 for NWS products
- Impact-based performance measures for weather forecast impact on air traffic
- Operational aviation advisory and forecast product generation from grids to improve forecast consistency for aviation products
- Operational WAFC icing gridded forecast product

Performance Goals and Measurement Data

Performance Measure:	FY	FY	FY	FY	FY	FY
Weather Products Net-Enabled	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With increase	0	0	0	120	130	140
Without increase	0	0	0	0	0	0
<p>Description: The emergence of pervasive digital networks, including the public Internet and internal NOAA and governmental broadcast networks has created opportunities in all sectors of society. Net-enabled products and technologies allow for new channels for access by customers, a real-time integration capability, and new efficiencies in internal operations, and offer new digital products or services. The previous and current requests contribute to the effort to net-enable all aviation weather products in order to allow ready access to information and support automation of forecast products and improvement of National Air Space NAS management. Metric indicates number of distinct products which are available operationally from the NextGen 4-D Weather Data Cube.</p>						

PROGRAM CHANGE PERESONNEL DETAIL
(Dollar amount in thousands)

Activity: National Weather Service
Subactivity: Operations & Research

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Project Engineer	Silver Spring, MD	GS-14	1	105,211	105,211
Project Planner	Silver Spring, MD	GS-13	1	89,033	89,033
Outreach Coordinator	Silver Spring, MD	GS-13	1	89,033	89,033
Logistics Coordinator	Silver Spring, MD	GS-12	1	74,872	74,872
Contract Manager	Silver Spring, MD	GS-12	1	74,872	74,872
Total			<u>5</u>		<u>433,021</u>
less Lapse		25%	<u>1</u>		<u>108,255</u>
Total full-time permanent (FTE)			<u>4</u>		<u>324,766</u>
TOTAL					324,766

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	4
Other than full-time permanent	0
Total	<u>4</u>
Authorized Positions:	
Full-time permanent	5
Other than full-time permanent	0
Total	<u>5</u>

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Operations, Research, and Facilities
Subactivity: Operations & Research

Object Class	2012 Increase
11 Personnel compensation	0
11.1 Full-time permanent	\$325
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	325
12 Civilian personnel benefits	99
13 Benefits for former personnel	0
21 Travel and transportation of persons	28
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	20
24 Printing and reproduction	0
25.1 Advisory and assistance services	14,394
25.2 Other services	220
25.3 Purchases of goods & services from Gov't accounts	2,949
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	8,509
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	400
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	26,944

Local Warnings & Forecasts: Complete Certification and Accreditation (C&A) of the National Critical Space Weather System (Base Funding: 45 FTE and \$9,585,000; Program Change: +0 FTE and +\$2,000,000): NOAA requests an increase of \$2,000,000 and 0 FTE for a total of 45 FTE and \$11,585,000 for the National Space Weather Prediction Center. Along with a redirection of base resources, a total of \$4,700,000 will be used to make required IT security improvements to the Nation's National Critical Space Weather System in order to prevent the loss of authority to operate, which would result in the shutdown of NOAA's space weather predictions and forecast program. With a solar max expected in 2013, this is a critical time period when NOAA must continue to provide alerts, watches, warnings, and forecasts to customers to ensure the Nation's infrastructure is protected from severe space weather storms.

Proposed Actions:

In FY 2012, the additional funding of \$2,000,000, combined with a redirection of resources provided in the base to enhance Space Weather modeling, will be used to address IT security deficiencies that jeopardize the SWPC authority to operate and provide the Nation with space weather forecasts and warnings. The requested funding will be used to:

Acquire hardware and software for Space Weather Forecast Center backup (\$1,000,000): Currently the National Weather Service has a single forecast office to issue the Nation's space weather alerts, watches, and warnings. This investment will provide the hardware and software to establish an alternate backup site for the system.

Modernize hardware and software to support satellite data ingest (\$2,300,000): Space weather satellite ingest is currently done only in Boulder and is considered a single point of failure. This funding will purchase new hardware and software to support a secondary location for space weather data ingest.

Update unsupportable legacy software (\$1,400,000): Software for space weather product generation systems was developed 25 years ago and cannot be supported by modern technology. The hardware to support this technology is no longer available and the software is not patchable to meet modern security requirements. A labor contract will be established to support the re-development and installation of the space weather product generation software to a modern, supportable, and secure platform.

Impact of Authorization to Operate

NOAA's Space Weather Program depends on the National Critical Space Weather System to: monitor, measure, and specify the space environment and provide timely and accurate operational space weather forecasts, warnings, alerts, and data to critical customers in the US and around the world. The Program is the sole civilian entity that (1) operates and maintains the US National Critical Space Weather System, (2) ingests and processes NOAA data as well as data from other sources, (3) supports research to understand the processes that cause severe space weather, (4) transitions research into operations to improve services, and (4) archives data from NOAA and the Department of Defense (DoD) and makes it accessible to customers. Without the Authorization to Operate, all of the above activities will cease and the space weather products and services critical to our Nation's infrastructure and defense will be lost. The Assistant Administrator for the National Weather Service has responsibility for granting the Authority to Operate (ATO) for the National Critical Space Weather System based on requirements for certification, accreditation, and ATO in the following: The Federal Information Security Management Act (FISMA), OMB Circular A130, and NIST Special Publication 800-37.

Statement of Need and Economic Benefits:

In 2005, the Space Weather Prediction Center (SWPC), then called Space Environment Center, was transferred into the NWS in recognition of its operational importance. Up to this time, SWPC was functioning within a research environment that was not designed to stand the rigors and requirements of NWS operations. This weakness became clear when in October 2007, NOAA's 3210 (National Critical Space Weather System) failed the certification and accreditation required by the Office of Management and Budget (OMB). The SWPC currently is operating under an interim authority to operate. Without substantial improvements, NOAA will be forced to shut down this critical national asset. This investment is requested to: (1) maintain the operational viability of the Nation's National Critical System Space Weather System, (2) to meet the Certification and Accreditation (C&A) requirements mandated for Federal information systems by the Federal Information Security Management Act of 2002 (FISMA), P.L. 107-347, and (3) to ensure the Nation's Authority to Operate this critical national resource.

Without timely and accurate alerts and warnings, space weather has the demonstrated potential to disrupt virtually every major public infrastructure system, including transportation systems, power grids, telecommunications, and global positioning systems (GPS). NOAA will provide these critical services by modernizing its aging space weather infrastructure, securing critical data to enable predictions and warnings, and integrating space weather and terrestrial weather products to support key industries such as commercial airline, electric power, and the GPS industry. Our national security and economic well-being that are now dependent on our advanced technologies are in danger without accurate 1-4 day advanced warnings of impending geomagnetic storms. According to a recent report by the National Academies, storm-disabled electric power grids and collateral impacts could result in projected economic and societal costs of approximately \$1 to \$2 trillion, and full recovery could take 4-10 years. Precision GPS-enhanced agriculture is an \$8 billion per year enterprise, and the Next Generation Air Transportation System is based entirely on GPS-enabled positioning, navigation and timing. Aircraft flying polar routes now include space weather as an integral part of the weather pre-brief, providing the pilot a big-picture view of the flight environment, including potential impacts to critical communication and navigation systems, and the potential for hazardous solar radiation exposure. Strong storms with the potential to impact critical elements of our Nation's infrastructure can occur over 100 times during a solar cycle. The Nation's advanced technology service providers will be looking to NOAA for alerts, watches and warnings needed to protect lives and livelihood and ensure continuity of critical operations. This funding ensures that NOAA will be prepared to meet their needs with actionable information.

Schedule & Milestones

FY 2012

- Begin migration of critical satellite data ingest and processing for the SWPC National Critical System to supportable environments
- Begin development of an alternate processing facility to overcome the many single points of failures that exist within the current infrastructure

FY 2013

- Complete migration of critical satellite data ingest and processing for the SWPC National Critical System to supportable environments
- Complete testing of disaster recovery systems
- Complete the build out of the alternate processing facility at a geographically separate site and begin limited operations

FY 2014

- Complete remaining actions necessary to satisfy C&A and receive full authorization to operate
- Establish refresh cycles to ensure systems remain current
- Full operations at both the primary and alternate processing environments including the introduction of annual fail-over exercises (COOP)

Deliverables

- All components of the National Critical Space Weather System migrated to supportable platforms
- NWS C&A and Authorization to Operate for NOAA 3210 National Critical Space Weather System
- Operate under two fully accredited space weather systems: National Critical (3210) and Business essential (3200) Space Weather System
- Fully functional primary and alternate processing facilities
- Space Weather IT Systems refreshed regularly as directed per industry standard best practices

Performance Goals and Measurement Data

Performance Measure:						
Achieve Authorization to Operate (ATO) for NOAA 3210 National Critical Space Weather System	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With increase	No	No	No	Yes	Yes	Yes
Without increase	No	No	No	No	No	No
Description: This measure shows when the National Critical Space Weather System will achieve full Authority to Operate.						

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Operations, Research, and Facilities
Subactivity: Operations & Research

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	2,000
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>2,000</u>

Local Warnings & Forecasts: Cooperative Observer Program (Base Funding: 1 FTE and \$10,975,000; Program Change: -0 FTE and -\$1,200,000): NOAA requests a decrease of 0 FTE and \$1,200,000 for a total of \$9,775,000 to the NWS Cooperative Observer Program (COOP) by phasing out approximately 1,000 COOP observing sites.

Proposed Actions:

NWS is reviewing and prioritizing the existing 11,000 COOP sites as part of the planning for phasing out of approximately 1,000 sites. Since the new Climate Service is implementing a network to replace the U.S. Historical Climate Network (USHCN), existing COOP sites that are also designated as USHCN sites will be phased out.

Statement of Need and Economic Benefits:

The NWS Legacy COOP Network consists of approximately 11,000 surface observing systems located throughout the United States. These stations are operated by volunteer COOP observers. Station equipment, station inspection, COOP training, and COOP site data acquisition and quality control is provided by the servicing WFO. COOP observational data supports the NWS field operations and climate program by providing data that is used in statistical and numerical model weather and river forecast guidance; to verify our forecasts, watches, and warnings; and to compute climatic trends.

Of the 11,000 COOP sites, 1,200 sites are designated as USHCN sites. Current USHCN stations' temperature and rain gauge sensors lack accuracy, precision, and resolution to monitor climate trends. The USHCN sites are not located in an optimal configuration, resulting in observing gaps, too many stations in some areas, and too few in other areas. The installation of the Regional U.S. Historical Climatology Network (RUSHCN) sites by the Climate Service will allow NWS to prioritize which 1,000 COOP sites to phase out. The NWS reviewed the current ~1,200 COOP Historical Climatology Network sites for the appropriateness for climate purposes and determined that only 70 of the 1,200 sites meet the Climate Observing Classification Scheme Criteria for rating a station's adequacy for monitoring climate. New stations will be deployed at specific (mostly new) locations that are equipped to support monitoring and assessing climate trends (variation and change) at the regional scale. The result will be improved confidence in U. S. regional climate monitoring not possible by upgrading existing USHCN sites largely due to development around existing sites.

NWS will conduct a prioritization of its COOP sites and phase out approximately 1,000 of the lowest priority legacy sites, for example, sites being replaced by RUSHCN deployments or where similar observations are collected by other available observing systems. The prioritization will minimize any impact on the quality of weather forecasts in areas where these observations are no longer collected.

Base Resources Assessment:

The base resource assessment is provided in the Program Summary for Local Warnings & Forecasts.

Schedule & Milestones:

FY 2012

- Reduce approximately 750 COOP legacy sites

FY 2013

- Reduce approximately 250 COOP legacy sites

Deliverables:

- Reduction of 1,000 COOP legacy sites

Performance Goals and Measurement Data

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
# of observations from COOP sites per year						
With decrease	4,000,000	3,700,000	3,600,000	3,600,000	3,600,000	3,600,000
Without decrease	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000
Description: Legacy COOP observations of temperature and precipitation (and other parameters) per year						

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Operations, Research, and Facilities

Subactivity: Operations & Research

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	-38
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	-1
25.1 Advisory and assistance services	0
25.2 Other services	-1,129
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	-32
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>-1,200</u>

Local Warnings & Forecasts: Telecommunications (Base Funding: 0 FTE and \$19,356,000; Program Change: 0 FTE and -\$3,203,000): NOAA requests a decrease of 0 FTE and \$3,203,000 for a total reduction of \$3,203,000. NWS believes it can achieve a target reduction in its telecommunications costs across all its programs and will take the reduction from its largest one, the Local Warnings and Forecasts base. This reduction can be achieved by the utilization of the new GSA Networkx contract.

Proposed Actions:

NWS is in the process of transitioning between GSA's FTS2001 and Networkx contracts.

In addition, NWS has ongoing initiatives that may reduce the need for added bandwidth. While these initiatives could conceivably result in lower existing costs, the likely result is in future cost avoidance. These initiatives include:

- Implement data compression (also called network acceleration) – This involves the installation of devices that compress the data on the network thereby effectively increasing the amount of data that can be carried on the network by some multiple without increasing physical bandwidth.
- Implement Quality of Service (QoS) – Using this technique, data traffic on the network is prioritized such that critical traffic, or traffic which is delay sensitive, always traverses the network without delay, while less critical traffic is subject to possible delays. This permits the network to be optimized in terms of bandwidth utilization, usually resulting in lower bandwidth and lower cost. Any delays are generally unnoticed by users.
- Implement dynamic bandwidth allocation – This technique allocates a guaranteed portion of the network (committed information rate or CIR) to various users but allows the bandwidth to be shared by all users when not in use by the users covered by the CIRs. This allows a much more flexible use of the total network bandwidth. This may reduce the need for more physical bandwidth and thus result in cost avoidance.

Schedule & Milestones:

- Award new GSA Networkx contract in 2011

Deliverables:

- New cost-saving GSA Networkx contract in place in 2011

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Operations, Research, and Facilities
Subactivity: Operations & Research

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	-3,203
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>-3,203</u>

Local Warnings & Forecasts: National Mesonet Network (Base Funding: 0 FTE and \$0; Program Change: -0 FTE and -\$19,000,000): NOAA requests a decrease of 0 FTE and \$19,000,000 for a total of 0 FTE and \$0 for the congressionally directed use of funds for the National Mesonet Network. NWS used congressionally directed FY 2010 funding to procure data from in situ mesonet observations, to further develop the Meteorological Data Ingest System (MADIS) for validation and quality control of mesonet data, and to develop a platform (MoPED) to ingest data from mobile observational systems. NWS can continue to achieve its operational GPRA targets using data collected from its existing observational systems. NWS will also continue to obtain observational data from many networks free of charge and will work towards integrating these data into operational models.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Operations, Research, and Facilities
Subactivity: Operations & Research

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	-19,000
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>-19,000</u>

APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH AND FACILITIES

SUBACTIVITY: SYSTEMS OPERATIONS AND MAINTENANCE

This subactivity reflects the costs of on-going operations and maintenance of major NWS observing and processing systems.

NEXT GENERATION WEATHER RADAR (NEXRAD)

NEXRAD (<http://www.roc.noaa.gov/>) is the joint NWS/FAA/DOD weather radar system consisting of 160 operational radars. NEXRAD utilizes Doppler technology and hydrometeorological processing to provide significant improvements over the previous generation of weather radars for tornado and thunderstorm warnings, air safety, flash flood warnings, and water resources management. The system is modular in design, upgradeable, has long lifecycle expectancy, and provides its principal users with a wide array of automated weather information that will increase their capability to meet their respective operational requirements. In FY 2012, NWS will continue to operate and maintain its network of 122 operational NEXRAD systems and 12 non-operational support radars. These non-operational support radars are used for training and maintenance.

THE AUTOMATED SURFACE OBSERVING SYSTEM (ASOS)

ASOS (<http://www.weather.gov/asos/>) is the Nation's primary surface weather observing network supporting aviation operations and weather forecasting. It was designed to replace manual observations in support of weather forecast activities, aviation operations, and the needs of the meteorological, hydrological, and climatological research communities. ASOS operates 24x7, significantly increasing the amount of information available to forecasters and the aviation community. ASOS is a joint National Weather Service (NWS)/Federal Aviation Administration (FAA)/Department of Defense (DOD) automated surface observation system consisting of 1,001 operational systems. ASOS provides reliable, continuous surface weather observations. Implementation of ASOS into NWS field operations provides continuous weather watch and yields improved staff productivity. NWS operates and maintains 315 NWS ASOS units. NWS also maintains 572 FAA ASOS units under a reimbursable funding arrangement. In FY 2012 NWS will continue operations and maintenance of its 315 ASOS systems, continue work on Phase 1 of ASOS Sustainment, and continue deployment of interim IT security improvements to bring the system into compliance with Federal, Department of Commerce, NOAA, and NWS Information Technology (IT) security policies and procedures.

ADVANCED WEATHER INTERACTIVE PROCESSING SYSTEM (AWIPS)

AWIPS (<http://www.crh.noaa.gov/lmk/?n=awipsoverview>) is the cornerstone of the modernized NWS. This system is required to integrate and display all hydrometeorological data at NWS field offices. AWIPS acquires and processes data from modernized sensors and local sources, provides computational and display functions at operational sites, provides an interactive communications system to interconnect NWS operational sites, and disseminates weather and flood warnings and forecasts in a rapid and highly reliable manner. This system integrates satellite and NEXRAD Doppler weather radar data and provides to the local field forecaster capabilities to significantly improve forecasts and warnings. AWIPS provides the only display for the NEXRAD Doppler weather radar at NWS Weather Forecast Offices (WFOs) and River Forecast Centers (RFCs). The AWIPS satellite broadcast offers the communications capability to provide internal and external users with open access to much of NOAA's real-time environmental data.

NATIONAL WEATHER SERVICE TELECOMMUNICATION GATEWAY (NWSTG) BACKUP

NWSTG (<http://www.weather.gov/tg/>) is the Nation's hub for the collection and distribution of weather data and products. NWSTG provides national and global real-time exchange services using automated communication resources to collect and distribute a wide variety of environmental data such as observations, analysis, and forecast products. These time-perishable products are distributed as received to ensure the fastest availability of the information. NWSTG ensures that the delivery of critical meteorological data necessary for the protection of life and property and the economic well-being of the Nation continues uninterrupted, providing increased operational availability and reducing risk vulnerability in the event of lost access to NWSTG for whatever reason.

The NWSTG Backup eliminates the NWSTG as a single point of failure by providing backup operations for the primary systems within 12 hours of a failure. This capability reduces the vulnerability of the NWSTG to extended outages and the risks to NWS operations. Thousands of customers worldwide use data distributed by NWSTG, and these data affect a wide range of economic and emergency management decisions. Without this backup capability, NWSTG is a single point of failure, vulnerable to natural disasters, human error, computer viruses, hacker attacks, and terrorism.

In conjunction with NWSTG Backup, the Legacy Replacement Project replaced the legacy NWSTG core mainframe-based message switching system with server-based technology, and upgraded the facility support infrastructure. Full operational capability of the Legacy Replacement was achieved in 2006 and full operational capability of NWSTG Backup was achieved in 2007. With the utility of the current hardware now waning and expected increased demand for processing capacity due to the demand for higher resolution weather products, planning for the next generation NWSTG architecture is underway.

Statement of Need for the Program

This subactivity reflects the costs of on-going operations and maintenance of major NWS observing and processing systems. NEXRAD is the NWS' prime observation system for acquiring information about tornados and severe storms (storms containing damaging winds, hail, turbulence, and lightning). NEXRAD provides information on precipitation that enables development of flash flood and heavy snow warnings, and is a key element in the forecasting of aviation related weather events. NEXRAD is the most important sensor contributing to meeting tornado and flash flood-related GRPA goals.

Since the first ASOS was fielded in 1992, the national needs for these data has resolved from hourly and special reports to higher temporal resolution data to feed models serving weather and aviation weather forecasts. Private sector and the hydrometeorological and climatological research communities are requesting higher resolution ASOS data as well.

NWSTG Backup was established to provide backup operations for the primary NWSTG within 12 hours of a failure.

Schedule & Milestones:

NEXRAD

FY 2013

- RDA LAN Switch and Remote Access Server – complete engineering tests and begin procuring modification kits

FY 2014

- RPG CPU and Peripheral I/O Devices – complete engineering tests and begin procuring modification kits

FY 2015

- RPG LAN Switch and Console Servers – complete engineering tests and begin procuring modification kits

FY 2016

- RDA Signal Processors and RPG Routers – complete engineering tests and begin procuring modification kits

ASOS

FY2012

- Complete deployment of interim IT security improvements
- Continue work on Phase 1 of ASOS Sustainment

FY2013

- Continue work on Phase 1 of ASOS Sustainment.
- Demonstrate ASOS functionality with a modern operating system

FY2014

- Complete Phase 1 of ASOS Sustainment
- Initial Operating Capability (IOC)

FY2015

- Commence work on Phase 2 of ASOS Sustainment

FY2016

- Commence work on Phase 2 of ASOS Sustainment

AWIPS

- Steady state

NWSTG Backup

- Steady state

Deliverables:

ASOS:

- Deployment of interim ASOS IT security improvements
- Improved auditing, incident reporting (through the system log), password management, and account management

NEXRAD:

- RPG Software Build 12B deployed in support of Dual Polarization modification at radars with redundant RDAs
- RPG and RDA Software Build 13 deployed to provide new signal processing science and Dual Polarization enhancements
- Begin deploying Pedestal Servo Power Amplifier modification kits to replace obsolete components to maintain 96 percent availability and control sustainment/maintenance costs
- Begin deploying Master System Control Function Processors and RDA Routers to replace obsolete components and maintain IT Security compliance

AWIPS

- Continued High Level of customer satisfaction with 24/7 support of operational system
- Continued High end-to-end Availability of Satellite Broadcast Network (SBN)
- Continued on-time software releases and hardware refreshes

- Continued Low Latency of Operational Wide Area Network (fast product dissemination)

NWSTG Backup

- Continue 24/7 support

Performance Goals and Measurement Data

NEXRAD Performance Measure	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Mission & Business Results: Network availability of 96%	96%	96%	96%	96%	96%	96%
Customer Results: Archived data available to customers in 24 hours 96% of the time	96%	96%	96%	96%	96%	96%
Description: Network availability measure tracks the uptime of the radars. This measure excludes planned preventive maintenance. Archived data availability metric tracks availability of radar data directed from the sites to NCDC to archive. NCDC has 24 hours to make radar data available to customers.						

AWIPS Performance Measure	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Workstation Performance Ratings (seconds)	86	78	71	65	59	53
Message Latency (seconds)	40	38	36	35	33	31
SBN end-to-end availability (%)	99.5	99.5	99.5	99.5	99.5	99.5
Site Hardware Availability (%)	99	99	99	99	99	99
Description: The above measures contribute to a high performance IT system in support of high level of forecaster skill and decision making ability, leading to faster, more accurate and more precise weather watches, warnings and advisories that will save more lives and property as improvements are realized.						

PROGRAM CHANGES FOR FY 2012:

NEXRAD O&M (Base Funding: 103 FTE and \$46,621,000; Program Change: +0 FTE and +\$127,000): NOAA requests an increase of 0 FTE and \$127,000 for a total of \$46,748,000 for NEXRAD O&M. This increase is requested to increase the base level of funding to that recommended in the FY 2010 President's Budget but not provided for in the Consolidated Appropriations Act, 2010. Funding will be used to support the operations and maintenance of the new Washington State radar. The Washington State radar will become operational in September of 2011 and is an addition to the existing network of operational radars.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Operations, Research, and Facilities
Subactivity: Systems Operation & Maintenance

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	127
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	127

ASOS O&M (Base Funding: 44 FTE and \$11,100,000; Program Change: +0 and +\$202,000): NOAA requests an increase of 0 FTE and \$202,000 for a total of \$11,302,000 for ASOS O&M. This increase is requested to increase the base level of funding to that recommended in the FY 2010 President's Budget but not provided for in the Consolidated Appropriations Act, 2010. Since 1992, the ASOS program has experienced a significant number of operational anomalies associated with software components. During subsequent years the number of anomalies and the severity of their impact has steadily increased. Funding is needed to continue the technology refresh of the ASOS IT subsystems to correct these operational anomalies. The IT subsystems are the Acquisition Control Unit (ACU) and the Data Collection Platform (DCP).

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Operations, Research, and Facilities
Subactivity: Systems Operation & Maintenance

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	202
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>202</u>

Congressionally Directed Projects (Base Funding: 0 FTE and \$6,225,000; Program Change: -0 FTE and -\$6,255,000): NOAA requests a decrease of \$6,225,000 to terminate the funding level that would continue under an annualized FY 2011 continuing resolution associated with the Congressionally directed projects identified in the Conference Report that accompanied the Consolidated Appropriations Act, 2010.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Weather Service
Account: Operations, Research, and Facilities

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	-2,400
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	-3,825
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	-6,225

APPROPRIATION ACCOUNT: PROCUREMENT, ACQUISITION, AND CONSTRUCTION

SUBACTIVITY: SYSTEMS ACQUISITION

AUTOMATED SURFACE OBSERVING SYSTEM (ASOS)

ASOS serves as the Nation's primary surface weather observing network. ASOS provides reliable, 24-hour, continuous surface weather observations which are vital to aviation safety and are important data points for numerical models and weather forecasting and warning services. The product improvement portion of this acquisition program is developing new ASOS sensor capabilities to meet changing user requirements and decrease maintenance costs for NOAA, DOD, and FAA in this tri-agency program.

The ASOS Product Improvement Sensors are crucial for aviation safety and continued support to numerical modeling and weather forecasting and warnings services. While ASOS is designed to support weather forecast and warning activities and aviation operations, at the same time it supports the needs of the meteorological, hydrological, and climatological research communities. ASOS works non-stop, continuously updating observations minute-by-minute, every day of the year, ensuring that critical surface observations are available to forecasters, air traffic controllers, and the aviation community.

Continual forecast improvement requires increasing accuracy of atmospheric data, and this data be collected more frequently and from more locations. ASOS information helps NWS increase the accuracy and timeliness of its forecasts and warnings. The ASOS Product Improvement Program will implement new beneficial technologies, replace sensors no longer in production, and reduce maintenance costs. Improved performance in detecting solid and liquid/solid mixes of precipitation and in icing conditions will promote increased aviation safety, better weather forecasting, and better climatology. Higher reliability designs will decrease maintenance and logistics costs, and improve availability of critical surface observations and weather information.

By FY 2012, NWS will have completed its replacement of ASOS legacy ceilometers. The legacy sensor had a maximum reporting height of 12,000 feet. The replacement ceilometer accurately reports cloud conditions to a maximum height of 25,000 feet, meeting NWS reporting requirements.

NWS is developing and deploying a Enhanced Precipitation Identifier (EPI) which will replace the current ASOS Present Weather reporting capability and detect, identify, and report rain, snow, drizzle, hail and ice pellets. The current Present Weather sensor is only capable of detecting and identifying snow and rain Present Weather elements. EPI will provide precipitation type verification for NWS forecasters. In addition, EPI will enhance decision support for general aviation flights and commercial aircraft de-icing operations.

Schedule & Milestones:

FY 2012

- Production and deployment of 6 EPI sensors

FY 2013

- Production and deployment of 6 EPI sensors

FY 2014

- Production and deployment of 6 EPI sensors

Deliverables:

- Deployment of EPI sensors

Performance Goals and Measurement Data

Performance Measure	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
ASOS sites with enhanced precipitation sensing capability	0	6	12	18	24	30
Description: Measure tracks the deployment of EPI to NWS ASOS sites.						

Multi-Year Budget Information (BA in thousands)

Major Cost Categories	FY 2011 & Prior	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	CTC	Total
ASOS Product Improvement	46,571	1,635						
Total Request	46,571	1,635	TBD	TBD	TBD	TBD	TBD	TBD

ADVANCED WEATHER INTERACTIVE PROCESSING SYSTEM (AWIPS) TECHNOLOGY INFUSION

The Advanced Weather Interactive Processing System (AWIPS) is the cornerstone of a modernized National Weather Service (NWS). AWIPS hardware and software was originally deployed to Weather Forecast Offices (WFOs), River Forecast Centers (RFCs), and other NWS sites throughout the United States from 1996 to 1999. The system has been in its Operations and Maintenance phase of its lifecycle since 1999, and is critical to the National Weather Service's mission to the preserve life and property from severe weather and flooding events and to enhance the national economy.

Sustained investments in the AWIPS hardware, communications, and software infrastructure are necessary for realizing return on NOAA investments in many other programs such as NEXRAD, weather satellites, other weather radars, sensors, and instruments. NWS GPRA goals are based on the effective use of investments in AWIPS, as are NWS' advanced decision assistance tools, forecast preparation and advanced database capabilities. Improvements in NWS Tornado Warning Lead Time, Flash Flood Warning Lead Time and Winter Storm Warning Lead Time goals can only be realized with continued support of, and improvements to AWIPS using new and improved science, and exploiting more accurate and higher resolution data and weather forecast model information.

To measure current and projected AWIPS system performance, NWS uses the Workstation Performance Rating (WPR). WPR shows the latency or inherent processing delay in seconds within the AWIPS system. A higher WPR means more latency, and therefore more delay, in processing and in getting forecasters the products they need in a timely manner. WPR benchmark analysis shows that without planned hardware improvements, AWIPS performance will decrease, resulting in degradation in Tornado Lead Time and other warning products.

To enable these critical performance increases, software re-architecture (AWIPS II) and IT security enhancements were initiated in 2006. AWIPS II will continue through 2011 with an anticipated completion date of FY 2012.

AWIPS has been designated an NWS National Critical IT system. As such, it was required to be certified and accredited using the National Information Assurance Certification and Accreditation Process (NIACAP) in FY 2008. System acquisition funds provided in this PAC program are critical to providing adequate security for this National Critical system. When the AWIPS II migration is complete with new LINUX equipment and SOA software architecture, the National Critical IT system designation will require a new NIACAP certification. It is anticipated that the C&A will be performed prior to the new software being released for operational use.

AWIPS II Extended is a multi-phase program to add significant improvements to AWIPS II after its initial deployment. As AWIPS II alone adds no new functionality at initial deployment, the AWIPS Extended effort delivers new and improved functionalities and capabilities to NWS field forecasters, NOAA partners and the public. AWIPS II Extended capabilities include the National Centers AWIPS (NAWIPS) integration with AWIPS, remote access capabilities to support Incident Meteorologists mission requirements, and training capabilities. In addition, AWIPS II Extended will add new capabilities to more effectively access data providers (data delivery), improve collaboration capabilities among NWS operational units and NOAA trusted partners, improve means to generate information to support decision makers, and enhance forecasters' ability to access and visualize meteorological information. These extended capabilities will also enable forecasters to better access and utilize increasingly complex and high-volume datasets from GOES-R satellite output and high-resolution models. In addition, improved collaboration will streamline product consistency across the NWS enterprise and allow for more effective decision support to NOAA partners, customers, and ultimately, the public.

Schedule & Milestones:

FY 2012

- NCEP AWIPS (N-AWIPS) migrated to AWIPS II
- WES and Archive Server migrated to AWIPS II
- Integrated NWS Enterprise Collaboration IOC

FY 2013

- Improved Data Delivery Initial Operating Capability (IOC)

FY 2014

- Improved Data Delivery Full Operating Capability (FOC)
- Integrated NWS Enterprise Collaboration FOC
- Information Generation Re-Architecture FOC
- 3 Dimensional (3D) Data Visualization IOC

FY 2015

- Extend NWS Enterprise Collaboration to NOAA Partners IOC

Deliverables:

- Successful completion of the NCEP-AWIPS (N-AWIPS) software migration into the new architecture
- Successful completion of an enterprise wide capability to support the fire weather mission, Weather Service Offices and Center Weather Service Units
- Successful completion of the integration of WES and Archive Server into the AWIPS II architecture

- Continue development of an integrated collaborative capability within the new architecture
- Continue development of the improved data delivery method

Performance Goals and Measurement Data

Performance Measure	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Storm-based lead time for Tornado Warnings, Measure 15a	12 minutes	13 minutes	13 minutes	13 minutes	14 minutes	14 minutes

Performance Measure	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Workstation Performance Ratings	86 seconds	78 seconds	71 seconds	65 seconds	59 seconds	53 seconds

Description: Workstation Performance Rating shows the latency or inherent processing delay in seconds within the AWIPS system. A higher WPR means more latency, and therefore more delay, in processing and in getting forecasters the products they need when they need them. WPR benchmark analysis shows that without planned hardware improvements, AWIPS performance will decrease, resulting in degradation in Tornado Lead Time and other warning products.

The outyear funding estimates are provided with the program change requested for this activity.

NEXT GENERATION WEATHER RADAR (NEXRAD)

The NEXRAD Doppler weather system is the single most important element in NOAA’s capability to warn for severe weather such as tornados, hail, and damaging thunderstorm-induced high winds. NEXRAD is a Doppler weather radar system that provides automated signal processing, computerized data processing by sophisticated meteorological software algorithms, and a high-capacity, processor-driven communications capability. The system is modular in design, upgradeable, has long life-cycle expectancy, and provides both governmental and commercial sector weather users with a wide array of automated weather information that will increase their capability to meet their respective operational requirements. For NWS, the system uses Doppler technology and hydrometeorological processing to provide significant improvements compared to previous radars, both in functional capability and in performance, including improved tornado and thunderstorm warnings, increased air safety, improved flash flood warnings, and improved water resources management.

NEXRAD, initially developed as a tri-agency Program (NWS, FAA, and the United States Air Force Weather Agency) has evolved into NEXRAD Product Improvement (NPI) Program, focusing on shared agency requirements to effect synergistic solutions. For example, external FAA radar data are provided to NWS forecast offices to address coverage issues and provide backup data sources. Near-term plans include the continued execution of the Dual Polarization project, currently in the test phase of a five-year development/implementation contract.

Recent NPI achievements include:

- Coordination and funding of the implementation of Super-Resolution, a signal-processing technique which supports the capability of NEXRAD to detect smaller tornadoes at greater distances (June 2008).
- Deployment of 45 systems which connect to FAA Terminal Doppler Weather Radars and provide the weather data from those radars to NWS weather forecast offices to supplement data provide by NEXRAD. (September 2008)
- Implemented a system to connect to an FAA air traffic radar in NW Washington state to address local weather radar coverage issues (December 2008)

NPI science improvements have made significant improvements in NEXRAD performance, products, and data leading to increased warning lead time for tornados, lower false alarm rate for severe weather warnings, and more accurate hail and precipitation amount forecasts. Because of problems in the Dual Polarization acquisition effort which jeopardize the deployment schedule, base resources for lower priority non-dual polarization activities within the program have been redirected to the Dual Polarization effort beginning in FY 2010.

As stated above, NPI is managing the Dual Polarization modification to NEXRAD. Dual Polarization transmits and receives signals in two dimensions, resulting in a significant improvement in precipitation estimation; improved ability to discriminate rain, snow, and hail; and a general improvement in data quality. Precipitation estimates, currently within 30% of ground-truth estimates, will improve to 12.5 percent as demonstrated in a study conducted by the National Severe Storms Laboratory in 2003. The improved precipitation estimates from the national network of radars will be used as input to weather models with a concomitant improvement in model outputs. The Dual Polarization capability will allow other improvements in severe weather detection, including improvements in snow storm detection and warnings, icing conditions for air and ground transportation, and continued support for improved modeling data input. NWS plans to upgrade all 122 NWS NEXRAD systems with the Dual Polarization capability, as well as 26 United States Air Force NEXRADs and 12 FAA systems under reimbursable agreements.

The Dual Polarization modification contract was awarded in September 2007. Initial deployment of the modification is scheduled for late FY 2011 and is scheduled for completion in FY 2013. The program was accelerated in FY 2009 using funds from the American Recovery and Reinvestment Act.

The schedule, milestones, deliverables, and outyear funding estimates are provided with the program change requested for this activity.

NWS TELECOMMUNICATIONS GATEWAY LEGACY REPLACEMENT

The NWSTG (<http://www.weather.gov/tg/>) is the NWS communications hub for collecting and distributing weather information to its field units and external users. Replacing the NWSTG system with up-to-date technology will reduce the current delays in collecting and disseminating data by reducing transit time through the NWSTG. The replacement will ensure reliable delivery of NWS products to users and will fully capitalize on better observation data and prediction models to improve services.

Timely, accessible, and accurate weather forecasts and warnings are critical to the health and well-being of citizens and businesses in the United States and around the world. The lack of weather forecasts and warnings undermine human health and sustainability of national security

and various federal systems. Weather and environmental disturbances have the potential to disrupt virtually every major public infrastructure system including transportation systems, power grids, telecommunications, and emergency response systems that protect the public. The NWSTG is the Nation's hub for the collection and distribution of weather data and products and provides national and global collection and distribution of environmental data and forecast products. As such, the NWSTG facilitates every NWS GPRA goal. In addition, commercial partners all depend on data collected and processed by the NWSTG.

Schedule & Milestones:

FY 2012

- Continue to procure data processing and communications hardware and software

Deliverables:

- Address component obsolescence on current architecture

Performance Goals and Measurement Data

Performance Measure	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Availability	99.9%	99.8%	99.7%	99.6%	99.4%	99.2%
Message Latency (seconds)	0.6	0.6	0.7	1.2	2.5	4.0
Description: Availability is measure indicating time system is available to users. Message Latency is a measure of the system's efficiency at moving information through the system. It measures the time it takes the system to process and disseminate a message.						

Performance Measure	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Processing Capacity (Terabits/day)	2.5	2.5	2.5	2.25	2.0	1.5
Description: Measures the number of terabits per day processed by the TG and tracks the progress towards achieving projected processing requirement.						

Multi-Year Budget Information (BA in thousands)

Major Cost Categories	FY 2011 & Prior	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	CTC	Total
NWSTG	11,054	1,195						
Total	11,054	1,195	TBD	TBD	TBD	TBD	TBD	TBD

RADIOSONDE REPLACEMENT SYSTEM

The NWS radiosonde network is the primary real-time upper air observation system for NOAA prediction models for severe weather, aviation, and marine prediction models and forecasts for day two and beyond. Observations of temperature, pressure, humidity, and wind speed/direction are taken twice a day at locations nationwide and in the Caribbean and Pacific using radiosondes. Radiosondes are balloon-borne instruments that transmit observational data to a ground receiving and processing station as they fly from the originating Upper Air (UA) Observing Site to up to 30km away. The network's observations are also used to benchmark

the satellite and ground-based thermodynamic profiler measurements of temperature and moisture. Additionally, accumulated radiosonde data fill portions of the climate record and is the foundation of other atmospheric research.

The legacy RDF (Radio Direction Finding) radiosonde network is currently being replaced by a Global Positioning System (GPS) radiosonde network. The replacement ground-receiving and GPS-based radiosonde system installed at 78 of 102 locations has already provided a six-fold increase in independent vertical observing. In addition, the replacement system has virtually eliminated data losses due to physical obstructions. Additionally, GPS radiosondes prevent the loss of both wind speed and direction readings due to low antenna angle observations caused by the jet stream carrying RDF radiosondes slightly beyond the radio horizon.

The transition to GPS technology has resulted in significantly more-accurate data from each flight. The RDF radiosondes transmit a complete observation (wind, humidity, temperature, pressure and altitude) every 6 seconds or 90 feet or more resulting in approximately 1,100 observations per flight compared to GPS radiosondes which transmit a complete observation every second or 15 feet providing approximately 6,700 observations per flight, a 6-fold increase. Today's powerful computers and higher resolution models are capable of processing the increased number of observations producing more accurate forecasts.

In addition, the replacement network meets NOAA's legislative mandate under the Omnibus Budget Reconciliation Act to vacate radio frequency spectra for auction and telecommunication utilization and to reduce bandwidth and interference on the frequencies used to transmit data from the radiosonde to the ground receiving station.

Schedule & Milestones:

FY2012

- Deploy 8 radiosonde replacement sites for a total of 86 GPS sites

FY2013

- Deploy 6 radiosonde replacement sites for a total of 92 GPS sites

FY2014

- Transition 10 CHUAS sites to GPS for a total of 102 GPS sites

Deliverables:

- 102 GPS site network

Performance Goals and Measurement Data

Performance Measure	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Number of UA observing sites launching GPS radiosondes	78	86	92	102	102	102
Description: The radiosonde replacement program was initiated as a result of the 1993 Omnibus Budget Reconciliation Act (OBRA) in which the Government reallocated 5 MHz (1670-1675 MHz) to the private sector effective January 1, 1999 requiring the NWS to vacate this part of the spectrum. The GPS radiosonde complies with this requirement and this output measure demonstrates full compliance with the OBRA. This profile assumes full funding of FY 2012 LWF GPS Radiosonde request.						

Multi-Year Budget Information (BA in thousands)

Major Cost Categories	FY 2011 & Prior	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	CTC	Total
Radiosonde Replacement Program (RRS)	63,362	4,014						
Total	63,362	4,014	TBD	TBD	TBD	TBD	TBD	TBD

WEATHER AND CLIMATE SUPERCOMPUTING

The NWS National Centers for Environmental Prediction (NCEP) Weather and Climate Operational Supercomputing System (WCOSS) is composed of primary and backup operational supercomputing systems, development computing systems, and the wide area network, which collectively perform a wide range of computational tasks. These tasks include data analysis, data assimilation, the execution of complicated prediction models and post processing, and product generation. The WCOSS provides support resources for (a) weather and climate forecasting capabilities 24 hours a day, 7 days a week, (b) numerical environmental prediction model development and testing, and (c) dissemination of NCEP operational products using the wide area networks. NCEP's operational products include national and global weather, water, climate and space weather guidance, forecasts, warnings and analyses to a broad range of users and partners (within NOAA, with other government agencies, military and the general public).

NWS maintains a backup supercomputer system, which is a clone of the primary supercomputer system and is located in an offsite facility. This system is used to thoroughly test pre-production weather and climate forecasting applications when it is not being used to run the Production Suite during a backup system test or actual emergency. The backup supercomputer system is capable of handling 100 percent of the operational workload should the primary supercomputer system be disrupted. Implementation and maintenance of a redundant Weather and Climate Operational Supercomputer Systems architecture ensures uninterrupted flow of essential weather and climate data and products, continuity of storm watch and warning services to the public, and compliance with NOAA Critical Infrastructure Protection (CIP) plans.

The increased need for NWS products for air quality, ecosystem, coupled modeling, and short-range ensemble forecasts has increased demands on the infrastructure support required to deliver them. The cyclical upgrade of NWS WCOSS capability is intended to procure the computing and communications equipment needed to receive and process the increasing wealth of environmental data acquired by modernized observing systems, process improved and more sophisticated numerical weather prediction models, and stay current with the supercomputing technology the market has to offer. Execution of this program promotes public safety and the protection of property by providing NCEP with the computer systems that are capable of producing more accurate NWS climate and numerical weather prediction (NWP) guidance products for hurricanes, severe thunderstorms, floods, and winter storms. Additionally, the upgraded supercomputing system will more accurately forecast large-scale weather patterns in the medium (3 to 10 days) and extended range (30 days), as well as forecasts of major climate events such as El Niño and La Niña. In addition, the computer upgrades will improve the delivery of products to the field and provide system users with enhanced productivity. These products and services will lead to significant economic benefits for all users and sectors, including the agriculture, construction, and transportation industries.

The schedule, milestones, deliverables, and outyear funding estimates are provided with the program change requested for this activity.

COMPLETE AND SUSTAIN NOAA WEATHER RADIO

National Weather Service faces challenges in its efforts to sustain a high level of reliability and maintainability of NOAA Weather Radio, due to equipment obsolescence and degraded reliability. Four hundred (400) NWR station transmitters employ 1970's-installed vacuum tube technology from four different manufacturers. These older stations are less reliable than newer ones using solid-state transmitters. Older stations demonstrate mean time between failure (MTBF) rates of 6,000 hours, or one failure every 250 days. In comparison, newer solid-state transmitters demonstrate MTBF of over 10,000 hours, a 67 percent improvement. Furthermore, stations have single points of failure due to configurations that include single, instead of dual, transmitters and lack of backup power generators to ensure continued service in the event of primary electrical service failure. Combined, these factors significantly decrease reliability and availability and increase logistics and maintenance costs. Refurbishing these older stations and adequately funding operations and maintenance costs will allow NWR to meet expectations of availability as the Nation's weather and all hazard warning system.

NWS will continue deployment of the NWR Broadcast Management System (BMS) as a replacement for the Console Replacement System (CRS) at each of the 122 Weather Forecast Offices (WFOs). The CRS is a main component of NOAA Weather Radio that converts text warning messages into digital voice which gives the NWS the ability to quickly disseminate Severe and High Impact Weather Warnings, Watches and forecasts and Non-Weather Emergency Messages to the public.

Schedule & Milestones:

FY 2012

- BMS deployment to WFOs

FY 2013

- Complete transmitter refurbishment installation
- Begin WRIP O&M

FY 2014

- Transmitter O&M

- WRIP O&M

FY 2015

- Transmitter O&M
- WRIP O&M

FY 2016

- Transmitter O&M
- WRIP O&M

Deliverables:

- NWR Steady State
- WRIP Steady State

Performance Goals and Measurement Data

Performance Measure	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Sustain NWR Service Availability	96%	96%	96%	96%	96%	96%
Description: This measure reflects NOAA’s ability to maintain and operational readiness including necessary equipment modernization to ensure overall NWR system reliability and availability. This NWR system consists of console replacement systems at each WFO, dedicated leased commercial phone lines to NWR transmitters, and the distributed NWR transmitters.						

The outyear funding estimates are provided with the program change requested for this activity.

NOAA PROFILER CONVERSION

The current wind profiler network, referred to as NOAA Profiler Network (NPN) consists of 35 operational and two support vertical looking radars that observe wind direction and velocity at various altitudes. This observational data are used in weather models that predict clouds, precipitation, and temperature. Most critically, the data provides indicators of severe weather, such as tornadoes and winter storms, formation. The data is also used for issuing aviation advisories, tracking volcanic ash plumes and predicting the spread of wildfires. NPN data has improved probability of detection, decrease false alarm rate, and improve lead time for tornado warnings, severe thunderstorms, flash floods, and winter storms. Wind profiler data also improves warnings related to aviation and fire weather.

Thirty-two of the existing 37 wind profilers use an experimental transmitter frequency of 404 MHz issued by the National Telecommunications and Information Administration (NTIA) upon the profilers’ deployment. These 32 profilers using the 404Mhz frequency must cease transmitting on this frequency by the end of the FY 2012 to avoid interference with the European Union’s Search and Rescue Satellite Tracking (SARSAT) transponders aboard the (Galileo) GPS satellite constellation. Thirty of the 32 wind profilers operating at 404MHz are located in the central U.S. along Tornado Alley.

This SARSAT frequency interference issue, along with the age of the existing NPN, led to considerable interest in replacement of the NPN with a new network of wind profilers operating at the 449 MHz frequency. The Senate Appropriations Committee, as part of a Cost and

Operational Effectiveness Analysis (COEA), requested a comparison of the cost to upgrade the NPN over the next decade versus the short, medium, and long-term costs of ending the NPN program.

The results of the COEA demonstrate that high-frequency wind data benefit several important NWS missions, in particular severe weather warnings (for tornadoes, flash floods, and winter storms), watches, and short-term forecasts. The COEA also considered a range of alternatives for providing wind profile information. The performance and cost-effectiveness analysis showed that sustaining the NPN, including upgrading the frequency, is the most cost-efficient method of obtaining high-frequency wind profiles as no alternative would be able to provide equal or higher performance at lower cost.

Following the COEA analysis, NOAA initiated the Next Generation NOAA Profiler Network (NGNPN) with the goal of upgrading NPN wind profiler radars to operate at 449 MHz. In addition to the upgrade of the wind profiler radars, the NGNPN program includes technology refresh for the network's VAX system computers and re-hosting the software on a LINUX platform; improving the telecommunications network; replacing site modems, data collection modems and uninterruptible power systems; and providing a major overhaul of site shelters and facility electrical distribution. The wind profiler radars are being upgraded with PAC funds and ORF funds support the technology refresh of the IT and processing systems.

The technology refresh and frequency conversion of the wind profiler radars are supported through a commercial contract. The current production contract tasks the development, production, and installation of next generation wind profilers through FY 2013. However an extension of the current contract or a re-compete will be required to meet the revised NPN schedule through FY 2015. In addition, future funding will be required to complete the technology refresh and frequency conversion of the entire network.

The schedule, milestones, deliverables, and outyear funding estimates are provided with the program change requested for this activity.

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PROGRAM CHANGES FOR FY 2012

Weather and Climate Supercomputing: NOAA High Performance Computing (Base Funding: 0 FTE and \$29,169,000; Program Change: +0 FTE and +\$11,000,000):

NOAA requests an increase of 0 FTE and \$11,000,000 for a total of \$40,169,000 to (1) transition NOAA's operational high performance computing (HPC) to a new HPC contract; (2) support on-going Hurricane Forecast Improvement Project (HFIP) modeling activities; and (3) to continue regular improvements to numerical weather prediction (NWP) modeling.

Proposed Actions:

The current operational HPC contract expires at the end of FY 2011. In FY 2012 and FY 2013, NOAA must transition operations to a newly competed contract utilizing more technologically advanced supercomputing systems. The first transition year enables preparation of data-center space and associated infrastructure and manufacturing, delivery, installation, and acceptance of systems. In the second transition year, NOAA will port, integrate, and validate its operational models onto the new systems. During this two year period, the production of operational NWP guidance on the current supercomputers will be maintained under a bridge contract while systems under the new contract are configured to support operations. The requested increase will fund the bridge contract.

NOAA will acquire a new, ten-year performance based contract for scalable operational HPC. This new contract will include technology refreshment every three (3) years, resulting in HPC capacity increases. This strategy ensures that NOAA's environmental modeling is processed on reliable, state of the art systems. This continual growth in capacity will enable NOAA to implement enhanced NWP modeling systems that lead to continuous, incremental improvements to many of NWS Government Performance and Reporting Act (GPRA) measures. These modeling systems allow NWS to improve Department of Commerce mission-essential weather services that enhance the economy and protect life and property. NOAA's weather forecasts are derived from a suite of global to local NWP, hydrological, land, coastal, and ocean models. These models provide the basis of all of NWS' prediction and related service areas, except for localized severe weather. Likewise, enhancements in model resolution and sophistication made possible by increased HPC capacity have directly resulted in proportionate improvements in GPRA scores. Historically, NWS forecast skills and GPRA scores have steadily improved by 1-3 percent per year, to which HPC contributes significantly.

Without the requested funding for the bridge contract, existing funds within HPC would be divided between the new contract and the bridge contract. Under this scenario, the new contract would be awarded with the same operational supercomputing capacity that exists today, which would plateau GPRA score improvements through FY 2014. In order to sustain historical improvements in forecast skills and GPRA scores, the standard HPC capacity increases achieved through level funding and technological advancements must be realized at the start of the new contract.

\$1.0 million of the requested resources will be used to augment the current HFIP development HPC system enabling the provision of real-time experimental products to the National Hurricane Center (NHC). NHC forecasters can get a head-start on initial operational testing and evaluation enabling acceleration of the optimization of the Hurricane Forecast System (HFS). This will enable NHC to determine transition requirements to the end-state operational products sooner.

Statement of Need and Economic Benefits:

The High Performance Computing and Communications Act of 1991 Section 204(a)(2) (P.L. 102-994, 15 U.S.C. 5501-5528) states: “the National Oceanic and Atmospheric Administration shall conduct basic and applied research in weather prediction and ocean sciences, particularly in development of new forecast models, in computational fluid dynamics, and in the incorporation of evolving computer architectures and networks into the systems that carry out agency missions.” NOAA Administrative Order 216-110 establishes a NOAA policy for managing high performance computing resources as a corporate asset in support of NOAA's mission. The WCOSS investment supports NOAA's objectives of (1) Serving society's needs for weather and water information; (2) Supporting the Nation's commerce with information for safe, efficient, and environmentally sound transportation; and by 3) Providing critical support for NOAA's mission. The WCOSS supports strategic use of information technology including integrated high performance computing resources and data archival/retrieval capabilities, as needed to support NOAA's observation systems, data management, and modeling needs for operational service delivery.

NOAA provides environmental monitoring, assessment, and prediction services in order to protect life and property by ensuring an uninterrupted flow of critical forecast products. This program ensures the continued generation of NWS/NCEP products from operational forecast models and provides support for operating the NOAA's R&D supercomputer which serves as the meteorological and climate testbeds. Moreover, it supports the climate development work and the Joint Center for Satellite Data Acquisition (JCSDA) efforts.

The current increase request impacts NOAA's ability to apply HPC resources to support NOAA's science-based modeling applications and thereby achieve certain model based GPRA measures. HPC capacity enables NWS to output approximately 28 million model fields a day for every forecast hour, including temperature, winds, and humidity as a function of pressure. The model-based guidance underpins the provision of most of NOAA's products and services to the Nation by providing models and model-based estimates of both current and future states of the Earth's environment. Decision makers at all levels rely on this credible information at finer scales to support strategies to protect the lives and livelihoods of American citizens and to support commerce.

This request acquires the critical operational HPC resources needed to transition NOAA's weather modeling research advancements. The implementation of improved NWP models will enable NOAA to provide emergency managers additional lead time for winter storm events with great accuracy and provide maritime vessel operators and commercial fishermen more accurate marine wind and wave forecasts to optimize operations, among other benefits. In addition, this effort will enable tsunami models to become part of the NOAA operational model production suite by using NOAA operational HPC as an enterprise IT platform. By consolidating tsunami models currently running on multiple platforms, NOAA will leverage HPC processing and storage capacities and contract management activities.

Base Resources Assessment:

The base resource assessment is provided in the Program Summary for Weather & Climate Supercomputing.

Schedule & Milestones:

- Award Operational HPC Bridge Contract in FY 2011 to ensure continuity of operations
- Award the new 10-year contract using full and open competitive process in FY 2012
- Delivery of new leased supercomputers and facilities at the end of FY 2012

- Augmentation of the development computer complete by the end of FY 2012
- Migrate and transition NWS modeling suite to new leased supercomputer capability in FY 2013
- Go live with operations on the new computers at the end of FY 2013

Deliverables:

- Approximately 28 million model fields a day for every forecast hour including temperature, winds, humidity as a function of pressure

Output	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Timeliness of Delivery for NCEP's model guidance	99.5%	99.5%	99.5%	99.5%	99.5%	99.5%
Supercomputing systems availability	99.5%	99.5%	99.5%	99.5%	99.5%	99.5%

Performance Goals and Measurement Data:

Performance measures detailed in Central Forecast Guidance and Local Warnings and Forecast base are impacted by the availability of HPC. HPC capacity is rate limiting for NWS' ability to run higher resolution and more sophisticated models. Forecast performance improvements in turn result from these most advanced modeling systems. Performance measures, such as winter weather accuracy and lead time warnings GPRA, Wind/Wave Forecast Accuracy GPRA, and aviation forecast GPRA depend on the skill of the NWS Global Forecast System (GFS). Hurricane Track and Intensity GPRA depend on a combination of the high resolution hurricane forecast system, GFS, and ocean models. Without growth in HPC capacity these GPRA targets will stagnate.

Performance Measure: Winter Storm Warnings Lead Time (hours), Measure 15f	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	15	19	19	19	20	20
Without Increase	15	19	19	19	19	19

Performance Measure: 500 mb height anomaly for NWS Global Forecast System	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	0.860	0.866	0.872	0.875	0.875	0.900
Without Increase	0.860	0.860	0.860	0.860	0.866	0.872

Description: The weather forecast skill is assessed using a scientifically accepted measure, called 500 millibarr anomaly correlation. This measure serves as a very sensitive proxy for overall forecast of lead times and accuracy of severe weather events. The Global Forecast System serves as the underpinning of NCEP's modeling suite and NCEP's services to the Nation.

Performance Measure: NWS Operational Computational Capacity (terraflops)	FY	FY	FY	FY	FY	FY
	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Increase	70	70	200	200	500	500
Without Increase	70	70	70	70	500	500
Description: FLOPS is an acronym meaning Floating point Operations Per Second. The FLOPS is a measure of a computer's capacity, especially in fields of scientific calculations. The terraflops unit is equal to one trillion flops. This measure represents the HPC capacity available to generate the operational NWP guidance to NWS internal and external customers.						

Outyear Funding Estimates (BA in thousands)

Weather & Climate Supercomputing	FY 2011 & Prior*	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	CTC	Total
Change from FY 2012 Base		11,000						
Total Request	265,860	40,169	TBD	TBD	TBD	TBD	TBD	TBD

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Procurement, Acquisition, and Construction
Subactivity: Systems Acquisition

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	10,000
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	1,000
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	11,000

AWIPS Tech Infusion (Base Funding: 15 FTE and \$24,000,000; Program Change: +0 FTE and +\$364,000): NOAA requests an increase of 0 FTE and \$364,000 for a total of \$24,364,000 for AWIPS Tech Infusion. This increase is requested to increase the base level of funding to that recommended in the FY 2010 President's Budget but not provided for in the Consolidated Appropriations Act, 2010. The potential loss of \$364,000 in the AWIPS Tech Infusion budget on a recurring basis in FY 2012 and beyond would inhibit our ability to incorporate new and/or enhanced hydrometeorological data sets into AWIPS. New and/or enhanced data sets infuse new science into NWS operations that is critical to improving warning and decision support across NWS mission areas including severe weather, tropical and aviation services. A funding level of \$364,000 supports the necessary software development to incorporate about 3 new or enhanced data sets into AWIPS on a yearly basis.

Outyear Funding Estimates (BA in thousands)

AWIPS Tech Infusion	FY 2011 & Prior*	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	CTC	Total
Change from FY 2011 Base		364						
Total Request	196,873	24,364	TBD	TBD	TBD	TBD	TBD	TBD

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Procurement, Acquisition & Construction
Subactivity: Systems Acquisition

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	364
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>364</u>

NEXRAD Product Improvement (NPI) (Base Funding: 5 FTE and \$7,976,000; Program Change: -0 FTE and -\$2,157,000): NOAA requests a planned decrease of \$2,157,000 and 0 FTE for a total of \$5,819,000 and 5 FTE to reflect the nearing completion of the NEXRAD Product Improvement project.

Outyear Funding Estimates (BA in thousands)

NEXRAD Product Improvement	FY 2011 & Prior*	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	CTC	Total
Change from FY 2012 Base		(2,157)						
Total Request	105,244	5,819	TBD	TBD	TBD	TBD	TBD	TBD

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Procurement, Acquisition, and Construction
Subactivity: Systems Acquisition

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	-1,486
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	-671
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>-2,157</u>

Complete and Sustain NOAA Weather Radio (NWR): Weather Radio Improvement Project (WRIP) (Base Funding: 0 FTE and \$11,000,000; Program Change: -0 FTE and -\$5,406,000):

NOAA requests a decrease of 0 FTE and \$5,406,000 for a total of \$5,594,000. This planned decrease reflects the completed funding for the deployment of the NWR Broadcast Management System (BMS) and associated hardware at all 122 Weather Forecast Offices (WFO).

Outyear Funding Estimates (BA in thousands)

Complete and Sustain NWR	FY 2011 & Prior	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	CTC	Total
Change from FY 2012 Base		(5,406)						
Total Request	47,284	5,594	TBD	TBD	TBD	TBD	TBD	TBD

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Procurement, Acquisition, and Construction
Subactivity: Systems Acquisition

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	-5,406
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>-5,406</u>

NOAA Profiler Conversion (Base Funding: 0 FTE and \$7,500,000; Program Change: -0 FTE and -\$2,020,000): NOAA requests a decrease of 0 FTE and \$2,020,000 for a total of \$5,480,000 to extend the ongoing modernization of the 20-year old NOAA Profiler Network (NPN) to take advantage of the slip in the European Union's Search and Rescue Satellite Tracking (SARSAT) transponders aboard the (Galileo) GPS satellite constellation. NOAA is able to reduce its budget requirements as a result of this slip.

Proposed actions:

The revised outyear profile will enable NWS to convert eleven (11) profilers currently operating at 404 MHz to 449 MHz and provide technology refresh to the 20-year old system.

- FY 2012: Two (2) profilers will be modernized and their operating frequencies converted from 404 MHz to 449 MHz; one (1) support system (used to train maintenance technicians) will be modernized at the NWS Training Center (NWSTC).
- FY 2013: Three (3) profilers will be modernized and their operating frequencies converted from 404 MHz to 449 MHz.
- FY 2014: Three (3) profilers will be modernized and their operating frequencies converted from 404 MHz to 449 MHz.
- FY 2015: Three (3) profilers will be modernized and their operating frequencies converted from 404 MHz to 449 MHz.

Statement of Need and Economic Benefits:

The Next Generation NOAA Profiler Network (NGNPN) contributes to NOAA's ability to provide and substantially improve upon its high quality products and services, such as those focused on enhancing public safety, transportation, water resources, wildfire management, and air quality monitoring and prediction. These observations and their associated metadata will be utilized by field meteorologists within the Advanced Weather Interactive Processing System (AWIPS), assimilated into NOAA's numerical weather prediction models, made available to NOAA's partners in near real-time, and stored in the long-term archive for climate monitoring.

Implementing NGNPN will improve short-term warnings and forecasts by observing precursor conditions that are related to high-impact weather events, detect changes in regional atmospheric conditions impacting transportation, and provide climate-quality information for climate change monitoring.

The Senate Appropriations Committee requested, as part of a Cost and Operational Effective Analysis (COEA), "the cost to upgrade the NOAA Profiler Network (NPN) over the next decade versus the short, medium, and long-term costs of ending the NPN program." The results of the COEA demonstrated that high-frequency wind data benefit several important NWS missions: severe weather warnings (for tornadoes, flash floods, and winter storms), watches, and short-term forecasts. These products are important for public safety, aviation, and wildfire-suppression support.

Thirty-two of the existing 37 wind profilers use an experimental transmitter frequency of 404 MHz issued by the National Telecommunications and Information Administration (NTIA) upon the profilers' deployment. These 32 profilers using the 404Mhz frequency must cease transmitting on this frequency as the European Union's SARSAT transponders aboard the (Galileo) GPS satellite constellation, also operating at 404Mhz, come online. Thirty of the 32 wind profilers operating at 404MHz are located in the central U.S. along Tornado Alley. Whenever a SARSAT passes over a profiler, the profiler is turned off to prevent interference. Right now, this only occurs about 90 minutes per day. When fully deployed, the Galileo

satellites will be overhead for hours instead of minutes. Under these conditions, the 32 NPN profilers operating at 404MHz will have to shut down more than 23.5 hours per day, effectively rendering these profilers useless.

Additionally, in 2010, the NPN will have been installed for over 20 years without any technology refresh during its life cycle. Therefore, a second priority is tech refresh for the entire 37 wind profiler network. This tech refresh includes replacing the 5 existing 449 MHz profilers. By coupling the frequency replacement with the tech refresh, the government avoids risking significant problems with technology integration and achieves a more cost-efficient solution to supporting the life-cycle of these operationally critical systems.

Schedule & Milestones:

- FY 2012 - Production, delivery, and installation of 2 Next Generation NOAA Profiler Network (NGNPN) operational wind profilers and one support system at the National Weather Service Training Center
- FY 2013 - Production, delivery, and installation of 3 NGNPN operational wind profilers
- FY 2014 - Production, delivery, and installation of 3 NGNPN operational wind profilers
- FY 2015 - Production, delivery, and installation of 3 NGNPN operational wind profilers

Deliverables:

- A total of 24 operational next generation wind profilers operating at 449 MHz
- 2 support system next generation wind profilers

Performance Goals and Measurement Data

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Network Availability	Target	Target	Target	Target	Target	Target
With decrease	65%	56%	68%	79%	90%	90%
Without decrease	65%	59%	90%	90%	90%	90%
Description: The annual average percentage of wind profiler data available. As the EU Sarsat constellation increases, unconverted NPNs will require increased down time to avoid interference. Maximum percentage of network availability at 90 percent.						

Outyear Funding Estimates (BA in thousands)

NOAA Profiler Network	FY 2011 & Prior*	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	CTC	Total
Change from FY 2012 Base		(2,020)						
Total Request	30,743	5,480	TBD	TBD	TBD	TBD	TBD	TBD

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Procurement, Acquisition, and Construction
Subactivity: Systems Acquisition

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	-2,020
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	-2,020

APPROPRIATION ACCOUNT: PROCUREMENT, ACQUISITION, AND CONSTRUCTION

SUBACTIVITY: CONSTRUCTION

WEATHER FORECAST OFFICE CONSTRUCTION

To support its mission, the NWS operates and maintains 122 Weather Forecast Offices (WFO); 18 Weather Service Offices (WSO); 8 National Centers; 2 Data Collection Offices; and 2 Tsunami Warning Centers. Of the WFOs, 35 are leased.

The WFO Construction program started in the late 1980s as part of the NWS modernization and restructuring program. The original scope of the project, completed in FY 1999, included the construction or lease of 117 WFOs (13 of which were co-located with River Forecast Centers) and cost approximately \$250 million. Since then, NWS added five WFOs to address service coverage requirements in Guam; Northern Indiana; Caribou, ME; Huntsville, AL; and Key West, FL. The original modernization scope did not include the upgrade and modernization of Alaska and Pacific Region Weather Service Offices and associated employee housing units. The original facilities are reaching twenty years in age and require the typical capital improvements necessary to maintain their structural integrity, e.g., heating, ventilating, and air conditioning systems, roof and uninterruptible power supply replacements. In addition, this effort is essential to maintaining compliance with federal law and national and local building codes.

The schedule, milestones, deliverables, and outyear funding estimates are provided with the program change requested for this activity.

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PROGRAM CHANGES FOR FY 2012:

Weather Forecast Office (WFO) Construction (Base Funding: 0 FTE and \$0; Program Change: +0 FTE and +\$3,150,000): National Weather Service (NWS) requests an increase of \$3,150,000 and 0 FTE for a total of \$3,150,000 for a construction project in the Pacific Region and replacement of the heating, ventilating, and air conditioning (HVAC) systems at WFOs with modern, high efficiency units.

Proposed Actions:

The increase of \$3,150,000 will complete on-going construction modernization projects in the Alaska and Pacific Regions and replacement of two (2) HVAC projects. In FY 2012, the total funding increase of \$3,150,000 will be used for:

Alaska Facility Projects

St. Paul Island, AK Upper Air Inflation Shelter (UAIS): \$1,500,000

Pacific Facility Projects

Weather Service Office (WSO) Koror Relocation: \$1,000,000

HVAC Replacements

HVAC Units (2): \$650,000

Statement of Need and Economic Benefits:

The WFO Construction program started in the late 1980s as part of the National Weather Service (NWS) modernization to meet facility requirements. Completed in FY 1999, the original project scope included the construction or lease of 117 WFOs (13 of which were co-located with River Forecast Centers). Since then, NWS added five WFOs to address service coverage requirements in Guam; Northern Indiana; Caribou, ME; Huntsville, AL; and Key West, FL. The original modernization scope did not include the upgrade and modernization of Alaska and Pacific Region Weather Service Offices (WSOs) and associated employee housing units. The original facilities are reaching twenty years in age. In order to maintain the vitality of these facilities, capital improvements are required such as HVAC, roof and uninterruptible power supply (UPS) replacements. In addition, this effort is essential to maintaining compliance with Federal law and national and local building codes.

Schedule & Milestones:

FY 2012

- Award St. Paul Island, AK Upper Air Inflation Shelter (UAIS)
- Award Koror renovation contract
- Award 2 HVAC replacement contracts

FY 2013

- Award WSO in Chuuk, Federated States of Micronesia renovation contract
- Award 2 HVAC replacement contracts

FY 2014

- Award Bethel, AK UAIS building contract
- Award King Salmon, AK UAIS building contract

FY 2015

- Award Kodiak, AK UAIS building contract
- Award Kotzebue, AK UAIS building contract

FY 2016

- Award McGrath, AK UAIS building contract
- Award Cold Bay, AK UAIS building contract

Deliverables

- Alaska Facility Modernization
- Pacific Facility Modernization

Outyear Funding Estimates (BA in thousands)

WFO Construction	FY 2011 & Prior*	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	CTC	Total
Change from FY 2012 Base		3,150						
Total Request	121,326	3,150	TBD	TBD	TBD	TBD	TBD	TBD

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Procurement, Acquisition, and Construction
Subactivity: Construction

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	500
25.2 Other services	2,650
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>3,150</u>

Congressionally Directed Projects (Base Funding: 0 FTE and \$14,000,000; Program Change: -0 FTE and -\$14,000,000): NOAA requests a decrease of \$14,000,000 to terminate the funding level that would continue under an annualized FY 2011 continuing resolution associated with the Congressionally directed projects identified in the Conference Report that accompanied the Consolidated Appropriations Act, 2010.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: National Weather Service
Account: Procurement, Acquisition, and Construction

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	-601
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	-13,399
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	-14,000

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BUDGET ACTIVITY: NATIONAL ENVIRONMENTAL SATELLITE SERVICE

The budget proposes to rename the National Environmental Satellite, Data, and Information Service to the National Environmental Satellite Service, reflecting the proposed transfer of data and information management archive activities to the new Climate Service line office.

For FY 2012, NOAA requests an increase of \$727,891,000 and 0 FTE over the FY2010 enacted, after the technical transfer of programs to the new Climate Service, for a total of \$2,015,426,000 and 558 FTE for the National Environmental Satellite Service (NESS). The requested funding includes \$2,337,000 in inflationary adjustments. The technical transfer associated with the creation of the new Climate Service line office includes \$108,365,000 and 258 FTE associated with the line items listed below in the Significant ATB section. Additionally, as part of this re-organization, \$2,622,000 and 11 FTE is proposed to be transferred for the NOAA Library to the Office of the Chief Information Officer.

BASE JUSTIFICATION FOR FY 2012:

As the NOAA satellite service, NESS is responsible for the procurement, launch, and operation of the nation's civil operational environmental satellites. Along with providing for the health, safety and management of the satellites, NESS manages the product development and distribution of the corresponding data.

NESS has one sub-activity in the Operations, Research and Facilities appropriation: Environmental Satellite Observing Systems.

The goals of the Environmental Satellite Observing Systems sub-activity include: (1) maintaining a system of polar-orbiting satellites to obtain global environmental data; (2) maintaining a system of geostationary satellites to provide near-continuous environmental observations of the Earth's Western Hemisphere; (3) acquiring, processing, and analyzing data from NOAA, the Department of Defense (DoD), and other Earth-observing satellites; (4) supplying data, interpretations, and consulting services to users; (5) introducing new technology and processes to improve environmental satellite system capabilities; (6) determining requirements for future satellite systems; (7) serving as the lead U.S. agency for the Search and Rescue satellite system, including operating and maintaining the mission control center; (8) monitoring global sea ice conditions to support safe and effective marine transportation; and (9) demonstrating better ways to use and distribute environmental data from NOAA, the National Aeronautic and Space Administration (NASA), and other satellites, aircraft, and laboratory investigations.

The Environmental Satellite Observing Systems sub-activity (\$112,827,000 and 409 FTE) includes the following:

- Satellite Command and Control, including NOAA Satellite Operations Facility (NSOF) operations;
- Product Processing and Distribution;
- Product Development, Readiness, and Application, including Ocean Remote Sensing and the Joint Center for Satellite Data Assimilation (JCSDA);
- Commercial Remote Sensing Licensing and Enforcement;
- Office of Space Commercialization; and
- Group on Earth Observations (GEO).

NESS has two sub-activities in the Procurement, Acquisition and Construction appropriation: 1) Systems Acquisition and 2) Construction.

The Systems Acquisition sub-activity (\$1,174,007,000 and 149 FTE) includes:

- Geostationary Systems – N Series;
- Geostationary Systems – R Series;
- Polar Orbiting Systems – POES;
- Altimetry Mission – Jason-3;
- Polar Orbiting Systems – Joint Polar Satellite System;
- Critical Single Points of Failure (CIP);
- NPOESS Preparatory Data Exploitation; and
- Restoration of Climate Sensors

In FY 2012, the NESS Construction sub-activity consists of the budget line item Satellite CDA Facility (\$2,228,000 and 0 FTE).

Proposed Reorganization to establish a Climate Service line office:

The following reorganization adjustments are requested to transfer the NESS climate functions that provide the necessary support and expertise for the new Climate Service to become fully functional. This will allow NESS to focus on the operations and maintenance of NOAA's critical satellite infrastructure. It will also allow the Data Centers to align their climate work with the climate research and climate services communities within and external to NOAA. These reorganization adjustments for NESS would include the movement of the following NESS functions and activities to the Climate Service: Data Centers, Regional Climate Centers, Coastal Data Development and Environmental Data Systems Modernization program, part of GOES- N, EOS & Advanced Data Processing, Distribution & Archiving System, and CLASS.

As part of NOAA's effort to better manage its resources, additional transfers are requested to move the NOAA Library and the NESS Radio Frequency Management Division to Office of the Chief Information Officer.

Research and Development Investments:

The NOAA FY 2012 Budget estimates for its activities, including research and development programs, are the result of an integrated requirements-based strategic planning process. This process provides the structure to link NOAA's strategic vision with programmatic detail and budget development, with the goal of maximizing resources while optimizing capabilities. NESS requests \$28,435,000 for investments in R&D and infrastructure to support R&D in the FY 2012 Budget.

NOAA's strategic planning process makes specific reference to the objectives and milestones outlined in the NOAA 5-Year Research Plan for 2008-2012. The strict management of planning against these investment criteria, objectives, and milestones leads to NOAA budget proposals that reflect the research and development needs of the organization. The NOAA Research Council - an internal body composed of senior scientific personnel from every line office in the agency - is tasked with developing the 5-Year Research Plan, and provides corporate oversight to ensure that NOAA's research activities are of the highest quality, meet long-range societal needs, take advantage of emerging scientific and technological opportunities, and shape a forward-looking research agenda.

Significant Adjustments-to-Base (ATBs):

NOAA requests a net increase of 0 FTE and \$2,337,000 to fund adjustments to current programs for NESS activities. The increase will provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Service Administration (GSA).

NOAA requests the following transfers for a net change of \$0 and – 273 FTE.

From Office	Line	To Office	Line	Amount (\$000)
NESS	Archive, Access, & Assessment	CS	Observations & Monitoring - Climate Data & Information Services	\$28,189/ 119 FTE
NESS	Archive, Access, & Assessment	CS	Observations & Monitoring - Ocean Data & Information Services	\$9,319/ 39 FTE
NESS	Archive, Access, & Assessment	CS	Observations & Monitoring - Geophysical Data & Information Services	\$5,946/ 48 FTE
NESS	Archive, Access, & Assessment	CS	Integrated Climate Service - Regional Services	\$0/ 3 FTE
NESS	Climate Data Base Modernization	CS	Observations & Monitoring - Climate Data & Information Services	\$21,179/ 10 FTE
NESS	Coastal Data Development	CS	Observations & Monitoring - Ocean Data & Information Services	\$4,559/ 16 FTE
NESS	Regional Climate Centers	CS	Integrated Climate Service - Regional Services	\$3,500/ 0 FTE
NESS	Environmental Data Systems Modernization	CS	Observations & Monitoring - Environmental Sciences	\$9,511/ 0 FTE
NESS	Environmental Data Systems Modernization	CS	Observations & Monitoring - Climate Data & Information Services	\$0/ 23 FTE
NESS	Integrated Environ Applications & Info Ctr	CS	Observations & Monitoring - Environmental Sciences	\$3,000/ 0 FTE
NESS	NOAA Regional Climate Center program	CS	Observations & Monitoring - Environmental Sciences	\$850/ 0 FTE
NESS	GOES- N (PAC)	CS	Observations & Monitoring – Data Center Modernization (PAC)	\$2,846/ 0 FTE
NESS	CLASS (PAC)	CS	Observations & Monitoring - CLASS (PAC)	\$18,476/ 0 FTE
NESS	EOS & Advanced Polar Data Processing, Distribution & Archiving Systems (PAC)	CS	Observations & Monitoring – EOS & Advanced Polar Data Processing, Distribution, & Archiving Systems (PAC)	\$990/ 0 FTE
			TOTAL	\$108,365/ 258 FTE

NESS requests a technical adjustment to move \$108,365,000 and 258 FTE from NESS to the Climate Service (CS). These funds will be used to support the establishment of the Climate Service.

From Office	Line	To Office	Line	Amount
NESS	Archive, Access, & Assessment	PS	NOAA Wide Corporate Services & Agency Management Base	\$2,622/ 11 FTE

NESS also requests a technical adjustment to move \$2,622,000 and 11 FTE from NESS to Program Support, Office of the Chief Information Officer. These funds will be used to support the NOAA Library.

From Office	Line	To Office	Line	Amount
NESS	GOES- N (PAC)	PS	NOAA Wide Corporate Services & Agency Management Base	\$810/ 4 FTE

NESS also requests a technical adjustment to move \$810,000 and 4 FTE from NESS to Program Support, Office of the Chief Information Officer. These funds will be used to support the Radio Frequency Management Division.

Other Adjustments:

The NOAA FY 2012 Budget for NESS also requests other adjustments in the amount of \$2,104,000 to restore funds related to the Promote and Develop (P&D) account as provided in the FY 2011 annualized Continuing Resolution. The P&D transfer represents funds derived from duties on imported fisheries products and are transferred to NOAA from the Department of Agriculture. The annualized FY 2011 Continuing Resolution provided \$36,056,800, including carryover, less than requested in the budget due to a downturn in the international fisheries markets. To address a difference between estimated and actual transfer amounts, NOAA has spread the reduction to each of its seven line offices, taking a 1.06 percent reduction to each PPA. With this adjustment, NOAA seeks to restore ORF amounts for NESS back to the requested amount.

From Office	Line	To Office	Line	Amount
NESS (ORF)	All	NESS (ORF)	All	\$2,104,000

Administrative Cost Savings:

The Administration is pursuing an aggressive government-wide effort to curb non-essential administrative spending called the Administrative Efficiency Initiative (AEI). In order to be good stewards of taxpayer money, the Federal Government will continue to seek ways to improve the efficiency of programs without reducing their effectiveness. As such, the President directed each agency to analyze its administrative costs and identify savings where possible. After reviewing its administrative costs, the National Environmental Satellite Service (NESS) has identified \$11,948,000 in administrative savings. NESS has targeted a number of areas to achieve these savings, at both the Line Office Headquarters level and throughout the program offices. Using NOAALink, NESS anticipates saving money through more strategic sourcing of products and services. Consolidation of products will enable buying in bulk to reduce prices. Consolidation of services will result in dollar

savings by reducing the number of contracts to be managed. In the area of human capital, NESS expects to reduce its costs by holding vacant positions open for longer periods and eliminating some administrative positions. Administrative savings in the area of logistics plans and in general administrative support have been identified by limiting of the use of overnight mail services as well as consolidating services through a single provider. NESS has also identified savings tied to IT related items, primarily through delaying the refresh of computer equipment and eliminating redundant software licenses. In addition, NESS is planning to reduce costs through business process reengineering efficiencies, and by reducing travel to only support mission essential events. The \$11,948,000 in administrative savings identified above represent real reductions to the National Environmental Satellite Service's funding level and will help reduce overall spending by the Federal government.

Headquarters Administrative Costs:

In FY 2012, NESS Line Office headquarters will use \$22,418,977, after instituting planned savings as a result of the AEI mentioned above, to support general management activities, financial and budgeting, and IT related expenses, as well as supporting facilities and other general operating costs. These funds also include support for service contracts, utilities, and rent charges from the General Services Administration. As part of the AEI, NESS has reviewed its Line Office Headquarters costs and will be able to reduce previously planned costs by \$2,031,600. Specifically, NESS will use headquarters administrative funds to support the following:

Headquarters Program Support Type	Description	FY 2012 Amount	FY 2012 FTE associated with NESS Line Office HQ
General Management & Direction	Includes Assistant Administrator's office, public affairs, information services	\$8,233,700	32.9
CFO Operations	Includes Budget, Finance and Accounting	\$2,983,200	9.1
CIO Operations	Includes IT-related expenses and other CIO related activities	\$ 9,494,800	10.0
CAO Operations	Includes Facilities and Security costs, as well as other CAO related activities	\$1,758,577	0
Human Resources	All HR services, including Equal Employment Opportunity	\$1,980,300	11.5
Procurement services, Acquisitions, and Grants Management Operations		\$0	0
Total before AEI savings		\$24,450,577	63.1
<i>AEI Savings</i>		<i>(\$2,031,600)</i>	-
Total post AEI savings		\$22,418,977	63.1

NOAA recognizes the need to improve the transparency of the policies and procedures used by its line office headquarters to bill component programs for management and administrative services. NOAA is currently re-evaluating, standardizing, and documenting these policies and procedures for

each line office. Prior to the beginning of FY 2012, NOAA will publish its policies and procedures for assessing headquarters and administrative costs within the line offices on the NOAA CFO public website along with other budget and finance documents. NOAA looks forward to working with the Congress and other interested parties to increase the transparency and confidence in NOAA's financial management.

APPROPRIATION: OPERATIONS, RESEARCH AND FACILITIES
SUBACTIVITY: ENVIRONMENTAL SATELLITE OBSERVING SYSTEMS

The objectives of Environmental Satellite Observing Systems are to:

- Provide secure and efficient command and control of NOAA, DoD, and other non-NOAA operational environmental satellites; and
- To ensure timely and uninterrupted delivery of data to users

To achieve these objectives, NOAA meets the Nation's requirement to provide an environmental satellite system capable of providing timely and accurate environmental data. Early warning of major weather events saves countless lives and prevents substantial property damage. Billions of dollars in damage and hundreds of lives are lost each year due to natural disasters. These losses would be significantly worse if NOAA satellite data and services were unavailable due to interference with, or the failure of, critical satellite command and data acquisition infrastructure.

SATELLITE COMMAND AND CONTROL (<http://www.oso.noaa.gov/>)

The goal of the Satellite Command and Control program is to provide efficient and secure command and control of NOAA, DoD, and other non-NOAA operational environmental satellites to ensure timely and uninterrupted delivery of data to users.

The NOAA Satellite Command and Control program forms the backbone of the ground systems that command, control, and acquire data from NOAA's on-orbit satellites 24 hours per day, 365 days per year. The Satellite Command and Control program monitors satellite health and safety; schedules satellite operations and data acquisition to meet user needs; evaluates satellite systems performance; commands spacecraft; supports NASA during launch, activation, and evaluation of new satellites; and assesses satellite and ground station anomalies. The NOAA Satellite Command and Control program ensures acquisition and near real-time delivery of satellite data to product processing centers that, in turn, support NOAA's National Weather Service (NWS) mission to protect lives and property during severe weather events.

The Satellite Operations Control Center (SOCC)/Command and Data Acquisition (CDA) Facilities command and control both NOAA and non-NOAA environmental satellites; track the satellites health and safety; acquire and process all data delivered from the satellites; and pass these data to other NESS offices, primarily the Office of Satellite Data Processing & Distribution (OSDPD). The SOCC/CDA provides the vital link between the satellites and every data user. SOCC/CDA operations provide uninterrupted availability of critical information and support NOAA's critical national support functions that are not available commercially, such as real-time hurricane support.

NOAA Satellite Operating Facility (NSOF) Operations -

The NOAA Satellite Operations Facility (NSOF) provides a modern, state of the art facility and infrastructure that supports uninterrupted 24-hours, 7-days a week command, control and communications for NOAA's satellite program operations. The NSOF houses high technology equipment, including 16 antennas, which control Geostationary Operational Environmental Satellites (GOES), Polar-orbiting Operational Environmental Satellites (POES), and DoD's Defense Meteorological Satellite Program (DMSP) environmental satellites. Data from other non-NOAA operational and research satellites are also received to support specific NOAA missions. In addition to satellite operations, the 24/7 critical operations at NSOF provides environmental data used to develop weather and climate products, as well as other information products used daily by industry and citizens across the Nation.

Schedule & Milestones:

Command & Control	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16
Launch Readiness/ On-Orbit Checkout		DMSP F-19 Launch/ Operation Handovers			GOES-R Launch/ Operation Handovers	DMSP F-20 & JPSS-1 Launch/ Operation Handovers
Contract Award	Fairbanks Command Data Acquisition Station Operations and Maintenance			Engineering Mission Operations Support Service Contract re-compet		

Deliverables:

	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16
Percentage of GOES satellite data successfully acquired to meet customer quality and timeliness requirements.	99.0	99.0	99.0	99.0	99.0	99.0
Percentage of POES satellite data successfully acquired to meet customer quality and timeliness requirements.	99.0	99.0	99.0	99.0	99.0	99.0
Infrastructure Maintained # of National/Mission Critical Systems)	8	8	8	8	8	8
# of NOAA Managed Satellites	17	18	18	19	19	21
# of Non-NOAA Satellites Supported	12	12	12	12	12	12

Performance Goals and Measurement Data

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
% of satellite data received, processed, and distributed	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%
Description: This measure includes observations from the primary polar and geostationary spacecraft tracked from observation through availability to the user.						

PRODUCT PROCESSING AND DISTRIBUTION (<http://www.osdpd.noaa.gov/ml/index.html>)

The goal of the Product Processing and Distribution (PP&D) program is to provide the Nation with specialized expertise and computing systems that process, analyze, and distribute satellite-derived products and services that protect U.S. lives and property while enhancing the Nation's environmental, national, homeland, and economic security. PP&D processes data from Earth-observing satellites to provide the highest quality products and services to its users.

PP&D provides satellite-derived products and services using data from NOAA, the Department of Defense, and NASA environmental satellites, as well as foreign and commercial spacecraft; to national and international customers and users on a 24 hours-per-day, 7 days-per-week basis. PP&D products enable NOAA to accurately track the location, extent, and duration of severe weather such as hurricanes, tornadoes, and winter storms; support development of flash flood warnings; track volcanic ash clouds and severe winds that threaten aviation safety; detect remote wild land fires; monitor coastal ecosystem health; identify and monitor maritime hazards from sea ice; and assist in search and rescue activities. PP&D is the operational interface with NOAA's National Weather Service (NWS) and supplies the satellite data that makes up more than 99 percent of the information used in numerical weather prediction models. PP&D provides approximately 450 operational products organized into three categories: Atmospheric, Oceanographic, and Terrestrial.

The PP&D program is constantly assessing and using data from advanced satellite sensors to improve operational support to its customers. It also supports activities to improve the effectiveness and interoperability of national systems for sharing natural disaster information. By using maps and data generated by remote- and land-based sensors, this information is made widely accessible to all government agencies and other entities involved in managing and mitigating the impacts of disasters. PP&D products are widely used by all branches of the U.S. Armed Services and the Department of Homeland Security.

Included in the PP&D operations is NOAA's contribution to the joint U.S. National Ice Center (NIC), which monitors global sea ice conditions to support safe and effective maritime transportation in the Polar Regions, Great Lakes, Arctic, and North Atlantic waters. NOAA, the U.S. Navy, and the U.S. Coast Guard jointly operate the U.S. NIC to support the civil and military maritime communities. This service is critical to NWS warnings in ice-prone sea lanes, U.S. Coast Guard ice breaking missions, civilian and military shipping, and commercial fishing communities.

PP&D provides NOAA's contribution to the operations of the U.S. search and rescue satellite-aided tracking (SARSAT) system. SARSAT has contributed to the rescue of more than 28,000 people worldwide, including more than 6,000 people in the United States, since its inception in 1982.

Schedule & Milestones:

- FY12: Implement Metop-B products into operations
 - Complete Certification and Accreditation of Satellite Image Processing and Analysis System
 - Implement GOES-14 products into operations
- FY13: Complete transition of Interactive Multi-sensor Snow and Ice Mapping System V.3 into operations
 - Transition upgraded Southern Hemisphere Automated Snow and Ice Mapping system into operations

- FY14: Complete Certification and Accreditation of product processing system
- FY15: Implement GOES-15 products into operations FY16: Test and validate product processing capability for GOES-R and Metop-C

Deliverables:

- Transition new products into operations
- Upgrade system architecture to meet security needs and to facilitate transition of research products into operations
- Provide product continuity for GOES and POES products

Performance Goals and Measurement Data

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
% of NOAA-managed Satellite Data ingested, processed and distributed within targeted time	98	98	98	98	98	98
Description: This measure includes observations from the primary polar and geostationary spacecraft tracked from observation through availability to the user. This measure is used to track timeliness and customer satisfaction. The targeted time varies per satellite: GOES is 15 minutes, POES is 180 minutes (which is based on Advanced TIROS Operational Vertical Sounder timeliness), and DMSP is 2 to 3 hours.						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Number of product transition from research to operations	14	20	20	20	30	40
Description: This measures the number of validated products (both new and enhanced) that are transitioned from research into operations. Efficiency in managing Research To Operation program resources is reflected by the number of new satellite products that are developed and implemented within the defined schedule and cost criteria for each separate product project.						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Delivery percentage quality ice products	97	97	97	97	97	97
Description: Imagery required by the National Ice Center (NIC) to generate critical ice forecast and other ice products needed for safe marine transportation.						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Transmission percentage rate of SARSAT distress alert and location information to search and rescue	93	93	93	93	93	93

authorities within targeted time						
Description: Performance measure is important to beacon user customer group. The ability to deliver distress alerts in a timely fashion directly affects the chances of survival for the individual(s) in distress. Baseline performance was derived from historical data. The target performance is included in the Interagency SARSAT Operational Requirements document.						

PRODUCT DEVELOPMENT, READINESS & APPLICATION

(<http://www.star.nesdis.noaa.gov/star/index.php>)

The goal of NOAA’s Product Development, Readiness, and Applications (PDR&A) program is to provide applications-focused research that will develop and evaluate prototype products, algorithms, and pre-operational products to improve existing operational satellite products and services using data from current and next generation environmental satellites.

PDR&A enhances the accuracy of current satellite products and develops new satellite products to meet user requirements. Activities range from planning new satellite instruments to developing new satellite products and applications. This includes transitioning new satellite products to operations, improving satellite products as instruments degrade, and performing calibration/validation activities between instruments.

The Nation needs enhanced satellite data, to improve and extend weather forecasts, expand environmental monitoring and assessment capabilities, and to provide new and improved tools for scientifically based ecosystems management. In the next few years, the number and quality of satellite instruments will grow significantly, providing enhanced data capable of allowing major improvements in weather prediction accuracy. To make these improvements, it is necessary to have both a targeted research program and a cadre of scientists and computing systems dedicated to development of improved satellite data products. The PDR&A activity ensures the highest accuracy of NOAA’s current operational environmental satellite data and products via a robust and rigorous satellite data calibration/validation program. This effort improves product quality for the benefit of all users. PDR&A also incorporates the latest academic findings into its work through competitively awarded Cooperative Institutes with academic institutions (Universities of Wisconsin, Maryland, Colorado State, Oregon State, and the City College of New York). The academic expertise and the results of academic findings are infused into product development, readiness, and applications that either lead to improvements in existing products or to the development of new products or sensors.

Ocean Remote Sensing (ORS): ORS targets the development of ocean related products and their transition to operations. Its scope includes developing new and improved ocean remote sensing data, products, and capabilities; ensuring continuity of data streams and specifying requirements for next generation satellite sensors; improving the understanding of ocean dynamics; and addressing research and operational needs related to marine ecosystems.

ORS facilitates the delivery and implementation of multiple satellite ocean data streams with continued science maintenance and improvements in research, data acquisition, calibration, and validation, which are required to maintain and enhance satellite-based tools and products utilized by the global and coastal oceans user community. Major activities under ORS include CoastWatch/OceanWatch (including Marine Optical Buoy support), External Research (Cooperative Institute for Oceanographic Satellite Studies), Sea Surface Roughness, and Sea Surface Temperature.

Joint Center for Satellite Data Assimilation (JCSDA): JCSDA increases forecast prediction capabilities using advanced satellite assimilation methods. Its scope is to accelerate and improve the quantitative use of research and operational satellite data in weather, ocean, climate and environmental analysis and prediction systems.

JCSDA accelerates the application of satellite data for improving weather forecasts and other environmental models. The JCSDA was established to speed the development of new satellite data assimilation science into operational capabilities. NOAA (NWS, OAR, and NESS), NASA, and DoD are partners in this coordinated national effort to more fully realize the potential of the vast quantities of new satellite data that are becoming available. The JCSDA is also a risk reduction measure designed to accelerate the Joint Polar Satellite System and GOES-R data utilization for the development of numerical weather prediction models and forecast models that will lead to increased accuracy and longer-range forecasts. In the next few years, the number and quality of satellite instruments will grow significantly, providing an exponential increase in higher quality data capable of allowing major improvements in the accuracy of weather prediction.

Schedule & Milestones:

- FY11: GOES-R Level-2 Products developed
- FY12: Implement experimental oil spill mapping products
Initial validation of NPP instruments
- FY13: Development of NDE NOAA-unique products
Data assimilation experiments of NPP observations
- FY14: Jason-3 calibration program established
Data exploitation of GCOM-W1 mission
- FY15: Provision of near-realtime ocean surface wind data to the National and Central Pacific Hurricane Centers
- FY16: Post-launch checkout of GOES-R

Deliverables:

- FY11: GOES-R Level-2 product capability
- FY12: Experimental oil spill mapping product
NPP instruments validated
Experimental NPP data assimilated into models
- FY13: NDE NOAA-unique product capability
- FY14: Product algorithm capability from GCOM-W1 mission
- FY15: Near-realtime ocean surface wind data for nowcasts, forecasts, and warnings
- FY16: GOES-R Post-launch capability tested

Performance Goals and Measurement Data

Performance Measure:	FY	FY	FY	FY	FY	FY
	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
Number of products, applications, techniques, and systems developed	8	8	10	10	10	10
Description: As new requirements for satellite data and environmental information are identified and understood, research is performed that leads to the creation of new information products, applications, processing techniques, and systems.						

Performance Measure:	FY	FY	FY	FY	FY	FY
	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
Number of new satellite products transitioned to operations	20	20	22	23	25	25
Description: To apply its research to operational needs, satellite information products are developed and tested that meet the requirements of customers (e.g. the National Weather Service). After an extensive evaluation, the products that satisfy the requirements are transferred to operations for customer use.						

Performance Measure:	FY	FY	FY	FY	FY	FY
	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
Number of refereed papers published	75	75	75	80	80	80
Description: To assure that research is valid, high-quality, and up-to-date, scientific results are published in peer-reviewed journals.						

COMMERCIAL REMOTE SENSING REGULATORY AFFAIRS (CRSRA)

(<http://www.licensing.noaa.gov/>) The Nation requires a consistent and transparent regulatory process for licensing commercial remote sensing space systems in order to promote U.S. technological competitiveness and economic security, while ensuring satellite operation is consistent with our national security, intelligence, and foreign policy needs. NOAA's CRSRA program supports these requirements while furthering the Nation's homeland security and national security missions.

The CRSRA program coordinates interagency review of satellite license applications, amendments, and significant foreign agreements. NOAA licenses commercial remote sensing space systems and performs associated monitoring and compliance pursuant to the Secretary of Commerce's statutory responsibilities. Prior to issuing licenses, NOAA must consult with the Departments of Defense and State to ensure license compliance with national security and foreign policy, respectively. NOAA works closely with other U.S. Government agencies to implement policy and ensure international coordination. Major monitoring and compliance activities supported by NOAA include review of quarterly license reports, on-site inspections, audits, license violation enforcement, and implementation of restrictions during national security and foreign policy crises. The number of license applications and revocations vary each year, and are not predictable. The Department of Commerce's CRSRA through NOAA is responsible for enforcement and ensuring compliance with the terms of the license agreements. Worldwide commercial remote sensing space data sales were estimated to be \$735 million in 2007 and are expected to increase to \$2.5-\$3.4 billion by 2017. Dramatic future growth is expected due to growing civil and military user requirements, improvements in aerospace and information technologies, and e-commerce.

OFFICE OF SPACE COMMERCIALIZATION (OSC)

(<http://www.space.commerce.gov/remotesensing/>) OSC, managed by NOAA for the Department of Commerce, is responsible for developing space-related policies and promotion of the capabilities of the U.S. commercial space industry. OSC represents the Department of Commerce in negotiations with foreign countries to ensure free and fair trade internationally in the areas of space commerce. OSC assists U.S. commercial providers in their efforts to expand their business with the U.S. Government and promotes commercial provider investment by performing economic analysis on space and space-related markets. OSC identifies commercial

solutions for key NOAA and other civil government data acquisition requirements. OSC also acts as a broad industry advocate within the Executive Branch to ensure the Federal Government uses commercially available space goods and services to meet their requirements, avoids legal and regulatory impediments, and does not compete with the U.S. commercial space industry. The 2004 U.S. Space-Based Positioning, Navigation, and Timing (PNT) Policy established, through Presidential Directive, a permanent National PNT Executive Committee (EXCOM) to manage the Global Positioning System (GPS) and its U.S. Government augmentations as a national asset. The policy further directed the EXCOM to establish the National Space-Based PNT Coordination Office (NCO) to serve as the Secretariat and perform those functions delegated by the Executive Committee. The Deputy Secretary of Commerce is a member of the Executive Committee and OSC provides management, personnel and facility support to the NCO in addition to performing studies and related activities to meet Executive Committee tasking and responsibilities.

GROUP ON EARTH OBSERVATIONS (GEO) (<http://www.noaa.gov/eos.html>): The intergovernmental Group on Earth Observations (GEO) is a voluntary international partnership of governments and international organizations that provides a framework where these partners can collaborate globally on Earth observations. Its mission is the implementation of a Global Earth Observation System of Systems (GEOSS). The United States government is a founding member of GEO. The Office of Science and Technology Policy, Executive Office of the President, leads U.S. engagement with GEO and the Associate Director for Environment serves as U.S. Principal Representative to and Co-Chair of GEO. U.S. government participation in this international activity is coordinated through the interagency U.S. Group on Earth Observations (USGEO). USGEO facilitates domestic coordination of Earth observation initiatives, as well as engagement with the intergovernmental GEO aimed at advancing U.S. goals and objectives relating to Earth observations.

Program resources support the activities of the GEO Secretariat staff in Geneva, who coordinate the 110 cooperative tasks and subtasks of the GEO Work Plan. The work plan is updated annually, with major revisions every three years. Tasks range from data integration and management, to water cycle observations, to Earth observations for climate change adaptation. Program resources also support the domestic cooperative activities of USGEO, including preparations for U.S. government participation in major GEO meetings and events; the development of assessment reports for the Executive Office of the President; planning and coordination meetings focused on federal agency investments in Earth observations, workshops, and other forums.

Global environmental and resource issues are among the great global challenges of our time. Mitigating and adapting to climate change and supporting global food security through sustainable agriculture are among the most important and demanding of those challenges. Integrated Earth observations are the indispensable foundation for addressing these challenges, of which GEO is a critically important forum for international engagement and cooperation on Earth observations.

The GEOSS endeavor is resulting in unprecedented global access to environmental information, and promises to advance its integration into new data products for the benefit of societies and economies worldwide. It represents a commitment to three important Administration principles: science-based decision making, open access to data and information, and increased international cooperation on science and technology.

Schedule & Milestones:

CRSRA

- FY11-12: Key milestones in the next two years are to contribute as necessary to rewrite the Land Remote Sensing Policy Act of 1992. In addition, provide changes to the associated regulations, 15 CFR Part 960, which occurred in the Law, and changes in the private sector.
- FY13: Evaluate Kyl-Bingaman limits and establish new threshold if determined necessary
- FY14: Evaluate all standard operating procedures to assure effectiveness and address gaps, need for new procedures, or modification of existing procedures as appropriate
- FY15: Examine methodology for licensing of private space systems and determine if the existing license format is relevant or needs to change to better address changes in space systems and their operations
- FY16: Review regulations for currency and update if appropriate, republish any new regulations

Space Commercialization

- FY 12: Support ten major policy decision processes, industry studies, or related activities, approximately two to three per quarter.

GEO

- FY 12: Hosting of the GEO-VIII Plenary and associated Executive Committee meetings

Deliverables:

CRSRA

- Issuance of new licenses, waivers and or amendments to licenses, review and approval of foreign agreements, quarterly and annual audits, annual inspections with appropriate documentation for the record.

Space Commercialization

- Increased opportunities for commercial solutions for key NOAA and other civil government data acquisition requirements.
- Improved coordination between government and industry on space-related issues and enhance engagement in interagency space-related policy activities

GEO

- Advances to data sharing and data access by demonstrating the value of integrated observations to specific end users through improved products and information.

Performance Goals and Measurement Data

CRSRA

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Percent of all regulatory actions processed within statutory time lines	100%	100%	100%	100%	100%	100%
Description: Regulatory actions include the submission of new licenses, the amendment of an existing license (both are a 120 days by law), review, and approval of any waiver to a license or a foreign agreement (60 days).						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Percent of required audits and inspections completed within established time lines	100%	100%	100%	100%	100%	100%
Description: Audits and inspections are the quarterly and annual review of records, licenses, data protection plans and agreements, and the annual onsite inspection of the company and any station associated with the collection of satellite data. It is the verification for enforcement.						

Space Commercialization

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Number of major policy decisions supported and industry studies and related activities executed	10	10	10	10	10	10
Description: The target represents actions planned to be executed during the year that deal with commercial space issues and industry studies of the market.						

PROGRAM CHANGES FOR FY 2012:

Product, Processing and Distribution: IT Security - (Base Funding: 0 FTE and \$2,600,000; Program Change: +0 FTE and +\$3,108,000):

NOAA requests an increase of 0 FTE and \$3,108,000 for a total request of 0 FTE and \$5,708,000 to implement mandated security controls over the most critical IT assets in the NESS Portfolio. NOAA's environmental data and products are used as input to daily weather forecasts, hurricane tracking, and the nation's public weather warnings which directly support NOAA's mission. NOAA must protect its computing systems that collect and distribute environmental data to minimize disruptions in service. Disruptions in these vital services could lead to loss of life, injury, and damage to the economy.

Proposed Actions

Several IT security infrastructure requirements were largely unrecognized until the implementation of a markedly more rigorous Certification and Accreditation process in FY 2005. Since the original identification of this issue, requirements have continued to escalate. The requested funds will be used to address the most critical IT assets in the NESS portfolio and are intended to fund the implementation of the National Institute of Standards and Technology (NIST) and Federal Information Processing Standard (FIPS) 200 minimum required security controls on an annual basis. These security controls are mandated and cannot be waived. NESS has worked to improve its IT security program, but without additional funding, the security program is incomplete and will not adequately secure NESS information, assets, and services.

The funds will be used to perform annual IT system mandatory continuous monitoring and periodic certification and accreditation compliance; provide the ability to mitigate risk for the integrity and availability of NOAA's polar and geostationary satellite data; support compliance with the Federal Information Security Management Act (FISMA) and Department of Commerce IT security policies; and certification and accreditation or continuous monitoring of three non-critical systems.. The request ensures that NOAA can meet its core mission to command and control operational environmental satellites and to protect the computational resources necessary to ingest, process, and disseminate environmental satellite data and products. Specifically, funding will provide for continued configuration management of hardware and software; update, operation and maintenance of system security tools and controls; intrusion detection/prevention; incident handling, including rapid response to cyber security incidents; implementation of polices and standards; and system reporting to track and mitigate risk to system integrity. This work will be accomplished using contractors. Systems are located at the NOAA Satellite Operations Facility (NSOF) in Suitland, MD, and the Command and Data Acquisition Stations (CDAS) in Wallops, Virginia and Fairbanks, AK.

With these funds, the Environmental Satellite Processing Center (ESPC) will annually undergo continuous monitoring and upgrade IT Security of the NOAA/NESS Satellite Operations Facility (NSOF) in Suitland, MD. In addition, Satellite Operations Control Center/Command and Data Acquisition (SOCC/CDA) at the NOAA NSOF, the Wallops, VA and Fairbanks, AK Command and Data Acquisition Stations (CDAS) will receive funds as part of its continuous monitoring requirements and the IT Security upgrade for NOAA/NESS IT operations.

Statement of Need and Economic Benefits

The Department of Commerce Inspector General has identified a material weakness in the area of IT security across the Department. The visibility of these national critical systems highlights the importance of removing this material weakness. Currently, NESS is forced to accept a high degree of risk for its operational mission critical systems.

All NOAA national systems must be in full compliance with the Federal Information Security Management Act (FISMA); Clinger Cohen Act; Office of Management and Budget (OMB) Circular A-130, Appendix III; Security of Federal Automated Information Resources; National Institute of Standards and Technology Publications/Guidance and Federal Information Processing Standards; and the Department of Commerce IT Security Policies. NESS has diligently labored to improve its IT security program. This funding addresses the most critical requirements for an acceptable IT security posture. The bulk of this funding will address particularly vexing problems in implementing legally mandated security controls in a legacy system environment, containing the majority of NOAA's National Critical systems. In addition, these systems make up a major portion of DOC National Critical systems, which provide critical infrastructure services to the American people, and correcting security control inadequacies will have a major impact on the overall security posture of the Department.

The national critical systems this increase will help secure include:

- Environmental Satellite Processing Center (ESPC) – Provides computing resources necessary to produce satellite products used to prepare daily weather forecasts, track hurricanes, and supplies the Nation with public watches and warnings.
- Geostationary Operational Environmental Satellite (GOES) Ground Segment – Provides infrastructure and computing resources necessary to operate the GOES satellites, which are used to provide advanced warnings of thunderstorms, floods, hurricanes and other severe weather.
- Polar-orbiting Operational Environmental Satellite (POES) Ground Segment - Provides infrastructure and computing resources necessary to operate the POES satellites, which are used for a broad range of environmental monitoring applications including weather forecasting, climate research, and monitoring land usage.
- Data Collection System (DCS) – Provides Federal, state and local agencies the ability to monitor the environment through transmission of observations from surface-based platforms through NOAA satellites, and is instrumental in providing emergency managers with early warning of floods and other hazards.
- Constellation Observing System for Meteorology, Ionosphere & Climate (COSMIC) – Joint United States –Taiwan mission whose goal is to gain inexpensive profiles of temperature and moisture across the globe by intercepting GPS signals using a constellation of satellite-based receivers, resulting in improved weather forecasting.
- Jason-2 – Provides command and control computing resources for a four-partner radar altimeter mission to measure sea surface height and sea-level rise, which helps with monitoring climate change.
- Initial Joint Polar System Communication Element (IJPS CE) - Provides infrastructure and computing resources for the communication element for a joint NOAA - European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) mission.
- Satellite Antenna System (SAS) – System containing all satellite services antenna equipment used in the command and control systems.

Base Resource Assessment:

Base resource assessment is provided in the Program Summary for Product, Processing and Distribution.

Schedule & Milestones

- Continuous monitoring on all systems throughout each year
- Conduct annual penetration testing on all systems.

- Complete Plan of Action and Milestone (POA&M) requirements for each system
- Implement and operate security controls to protect systems
- Conduct Certification and Accreditation in accordance with NIST 800-53 standards for NOAA National Critical system ID's in:
 - FY12: Jason-2 (5046), IJPSS CE (5058)
 - FY13: POES (5026), COSMIC (5047), DCS (5004), IJPSS CE (5058)
 - FY14: GOES (5003), ESPC (5045), SARSAT (5023), SAS (5059)
 - FY15: Jason-2 and -3 (5046), IJPSS CE (5058)
 - FY16: POES (5026), SAS (5059), COSMIC (5047), DCS (5004), IJPSS CE (5058)
- Conduct Certification and Accreditation in accordance with NIST 800-53 standards for NOAA Non-Critical system ID's in:
 - FY12: WLAN (5032), SRAS (5038)
 - FY14: FCDAS LAN (5008),
 - FY15: WLAN (5032), SRAS (5038)

Deliverables

- Maintain current Certification and Accreditation packages for all nine national critical systems within the satellite services program consistent with NIST 800-53 requirements.
- Maintain three other non-critical systems

Performance Goals and Measurement Data

Performance Measure: # of NESS National Critical Systems that meet NIST IT Security Compliance Requirements	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	8	9	9	9	9	9
Without Increase	8	5	4	3	5	3
Description: IT Security compliance includes: certification and accreditation, continuous monitor, configuration management and security administration.						

Performance Measure: # of Completed Certification and Accreditation or Continuous Monitor of three non-critical systems	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	0	3	3	3	3	3
Without increase	0	0	0	0	0	0
Description: Systems require IT system administration, patching and Plan of Action & Milestone (POA&M) mitigation along with independent validation to allow us to maintain our Authority to Operate (ATO).						

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Product, Processing and Distribution
Subactivity: Environmental Satellite Observing Systems

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	3,108
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	3,108

Product, Processing and Distribution: NPP and Polar Continuity Data Processing and Distribution (Base Funding: 0 FTE and \$0; Program Change: +0 FTE and +\$3,811,000): NOAA requests an increase of 0 FTE and \$3,811,000 for a total of 0 FTE and \$3,811,000 to operationalize the processing and distribution of environmental data from the National Polar-orbiting Operational Environmental Satellite System Preparatory Project (NPP) mission. The NPP satellite is scheduled for launch in 2011. The NPP satellite will provide essential continuity of polar environmental observations to the National Weather Service (NWS) and civilian user community. This change will provide for data processing and distribution for NPP and the follow-on polar orbiting satellites called the Joint Polar Satellite System (JPSS).

Proposed Actions:

NOAA will initiate NPP data processing and distribution of environmental products on a 24x7 basis to NOAA Operational Centers, such as the NWS's Environmental Modeling Center, and other NOAA partners in the civilian user community after the NPP launch, currently scheduled for the fall of 2011. This system provides the only link to get near real-time NPP data. Funding provides a capability to process and deliver NPP data, which NOAA will make available for data continuity of polar satellite mission coverage. Funding will generate environmental products from the observational capacity of NPP that will lead to improved daily weather forecasts and warnings, hurricane landfall warnings, harmful algal bloom assessments, and ultimately to reduced annual economic losses due to weather.

Statement of Need and Economic Benefits:

NPP observations will enable the NWS to generate improved forecasts that will save lives and property. Specifically, the NPP products are needed to: 1) Support real-time assessments and short-to-medium range forecasts and warnings of environmental conditions that may endanger human safety and health, and safe transportation; 2) Assess vegetation and drought conditions; 3) Provide information on fire locations and burn areas; 4) Develop ocean products to enhance public health, protected species, fisheries and coastal zone management, recreational boating, the offshore oil/minerals industry, tropical (hurricane) cyclone analyses and; 5) Assess seasonal-to-inter-decadal variability of ocean color and sea surface temperature products for El Nino, La Nina, and Pacific Decadal Oscillation climate analyses.

Base Resource Assessment:

Base resource assessment is provided in the Program Summary for Product, Processing and Distribution.

Schedule and Milestones:

- FY12: Initiate NPP data processing and distribution using NDE Production Environment (PE)
- FY13: Assume full NPP data processing and distribution using NDE PE. Integrate first set of NPP Products into NESS Operations
- FY14: Integrate second set of NPP products into NESS Operations
- FY15: Integrate new JPSS Data Exploitation (JDE) equipment (Production Environment) into Operations.
- FY16: Sign Transition to Operations Plan for JDE Production Environment

Deliverables:

- 57 NPP environmental products: CriS/ATMS (Atmospheric Temperature and Moisture Profiles for NWS); MIRS (Microwave-based moisture products for NWS); SST (Sea Surface Radiances for NWS and Sea Surface Temperatures for NOS/CoastWatch).

Performance Goals and Measurement Data

Performance Measure:	FY	FY	FY	FY	FY	FY
Data Products Transitioned to Operational Production/Distribution	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Increase	0	9	10	10	14	14
Without Increase	0	0	0	0	0	0
Description: Implement into operations the processing and distribution of environmental data from the NPP mission and other polar missions. Products include microwave and infrared atmospheric soundings, atmospheric ozone, sea surface temperatures, vegetation health, and fire detection.						

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Product, Processing and Distribution
Subactivity: Environmental Satellite Observing Systems

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	2,010
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	1,801
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	3,811

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APPROPRIATION: PROCUREMENT, ACQUISITION, AND CONSTRUCTION
SUBACTIVITY: SYSTEMS ACQUISITION

Geostationary Operational Environmental Satellite Program

The goals of the Geostationary Operational Environmental Satellite (GOES) program are to continue the procurement of spacecraft, instruments, launch services, and ground systems equipment; provide satellite and instrument anomaly support to the on-orbit GOES satellites; and maintain the ground system for GOES satellite operations which is necessary to maintain an uninterrupted flow of environmental data collected from geosynchronous satellites to users.

GOES data provide:

- Cloud images and precipitation estimates for hurricanes and other coastal storms;
- NOAA CoastWatch sea surface temperature (SST) products for locating commercial and sport fish as well as protected marine species;
- New research products, such as ocean surface currents, that support both ecosystems management and safety of marine navigation;
- Primary information in the Nation's Climate Reference Network, providing reference quality data for surface temperature and precipitation monitoring;
- Images of the United States and adjacent ocean areas to enable the detection of hurricanes and other major weather events;
- Data collection from remote fixed in-situ observing platforms such as buoys and rain gauges for use in numerical weather prediction models and flood/drought assessments;
- Weather information to emergency managers for use in times of severe weather and during other disasters;
- A means to obtain quantitative environmental data such as temperature, moisture, wind, radiation and solar energy particle flux for use in weather predictions, hydrometeorological flux, climate long term trending, ecosystems management, commercial economic gain, and transportation safety; and
- Unique monitoring capabilities that support air, land, and marine transportation.

The GOES system provides an uninterrupted, continuous flow of data and information that meets customers' spatial, temporal and accuracy requirements, providing significant customer benefit within an established life cycle cost target. The procurement of GOES satellites is a cooperative venture between NOAA and NASA. Historically, NOAA defines requirements, manages, funds, implements system integration, procures ground segments, and operates the GOES satellites. NASA serves as the agency with multi-disciplinary engineering expertise, develops detailed system specifications, procures and launches the spacecraft, and assists NOAA in system integration.

NOAA GOES satellite systems are designed, developed, acquired, and operated as a single end-to-end system. The system includes the observing platform (space-based instruments satellites); command and control of the platform; product generation and distribution; archive and access; and user interface. GOES contributes to an Integrated Global Observation System, is defined as an end-to-end approach linking requirements to services, delivers critical real-time data and information needed for sound decision making, addresses needs to support expanded climate services, and works with global partners.

GOES observations allow continuous monitoring from the same angle during the tracking/detection of severe storms, atmospheric moisture changes, mesoscale scanning, currents flow dynamics, and atmospheric chemicals (particles) that cannot be achieved from a non-stationary orbit without

increased error rates and lost data segments. NOAA maintains an on-orbit spare to complement the two operational GOES satellites. This on-orbit spare philosophy allows NOAA to quickly replace a failed satellite by re-positioning an on-orbit satellite to ensure there is no loss in continuous coverage. To facilitate this strategy, NOAA plans the launch of the next satellite to coincide with the planned switchover of the on-orbit spare to operational status.

GOES-N SERIES (http://www.osd.noaa.gov/GOES/goes_n.htm)

The NOAA GOES program serves the public by generating timely and accurate environmental data, images, and other weather information. A primary function of the GOES program is supporting the NWS in forecasting, tracking, and monitoring severe storms. The improved accuracy of the NWS forecasts by using GOES data results in dissemination of timely weather forecasting and advisories to impacted areas to ensure authorities and the public are equipped with decision-making information to protect lives and property. The GOES-N Series program includes GOES-13, GOES-14, and GOES 15 satellites, launched May 2006, June 2009, and March 2010, respectively.

GOES satellites provide many weather images seen on United States television newscasts every day. The GOES imaging and sounding instruments feature flexible scans for small-scale area viewing in regions of the visible and infrared spectrum allowing meteorologists to improve short-term forecasts. The GOES provides nearly continuous imaging and sounding, which allow forecasters to better measure changes in atmospheric temperature and moisture distributions and hence increase the accuracy of their forecasts. GOES environmental information is used for a host of applications, including weather monitoring and prediction models, ocean temperatures and moisture locations, climate studies, cryosphere (ice, snow, glaciers) detection and extent, land temperatures and crop conditions, and hazards detection.

In April 2010, when tornadoes touched down in Yazoo City, Mississippi, the GOES-N Series of satellites provided images that tracked those tornadoes and thereby facilitated the NWS in issuing timely advisory warnings. Additionally, the GOES produced some of the first images to track smoke from the oil fire, that later became the Deepwater Horizon Oil Spill in the Gulf of Mexico. Scientists and environmentalists used and continue to use the GOES data and images to assess environmental impact to that region.

The GOES program operates a two-satellite constellation in geosynchronous orbit above the equator and observes about 60 percent of the Earth with at least one satellite placed in on-orbit storage. The satellites measure the Earth’s atmosphere, its surface, cloud cover, and the solar and geosynchronous space environment; and provide a platform for the Imager, Sounder, Solar X-Ray Imager (SXI), and space environment monitoring instruments. The system also supports land and ocean-based Data Collection Platforms, transmits Imager and Sounder data, relays Low Rate Information Transmission data, relays GOES variable reformatted Imager and Sounder data, relays Emergency Managers Weather Information Network broadcasts and participates in the international Cospas-Search and Rescue Satellite-Aided Tracking (SARSAT) system.

Spacecraft	Date Launched	Operational Date
GOES-13	May 2006	2010-2015
GOES-14	June 2009	2012-2017
GOES-15	March 2010	2015-2020

See the Program Change for the proposed schedule/milestones, deliverables, and budget profile.

GOES-R SERIES (<http://www.goes-r.gov/>)

The GOES-R program will provide end-to-end system integration through the acquisition, deployment, maintenance, and operations of the space, ground, and launch segments.

The needs and benefits of GOES-R series satellites are as follows:

- Maintains continuous real-time observations for severe storms, hurricanes, and weather monitoring to the Nation;
- Needed as a backup to GOES-14 or 15; part of a system of two operational satellites and an on-orbit spare;
- Provides advances in NOAA’s observation capabilities for all NOAA mission goals including improvements to coastal, space weather, and lightning observations; and
- Incorporates key enhancements in spatial and spectral information, coverage, and timeliness.

Average annual damage from tornadoes, hurricanes, and floods is \$11.4 billion with about 100 deaths annually (Extreme Weather Sourcebook 2001: *Economic & Other Societal Impacts Related to Hurricanes, Floods, Tornadoes, Lightning, and Other U.S. Weather Phenomena*. Collaborative Program on the Societal Impacts and Economic Benefits of Weather Information, Boulder, CO). Approximately \$4 billion per year is lost in economic efficiencies as a result of weather-related air traffic delays (NOAA, 2002: GOES-R Sounder and Imager Cost/Benefit Analysis, NOAA NESS Office of Systems Development, Silver Spring, MD). Lightning causes between \$4 and \$5 billion in losses each year in the civilian sector with about 47 deaths and 303 injuries per year (NOAA, 2004: GOES-R Sounder and Imager Cost/Benefit Analysis - Phase III. NOAA/NESS/Office of Systems Development, Silver Spring, MD). By helping to produce more accurate forecasts and warnings, the GOES-R series will minimize these losses.

Funding is used for the:

- Continued development of GOES-R & S spacecraft and ground system. The program will continue to work towards the Critical Design Review (CDR) for the GOES-R Series system, for both spacecraft and ground system;
- Continuation of instruments already under contract: Advanced Baseline Imager (ABI), Solar Ultra Violet Imager (SUVI), Extreme Ultra Violet Sensor/X-Ray Sensor Irradiance Sensor (EXIS), Space Environmental In- Situ Suite (SEISS), and Geostationary Lightning Mapper (GLM);
- Continued funding of flight models and spares for each instrument in FY 2012 and product algorithm development for the ABI Instrument for GOES-R and GOES-S satellites; and
- Continuation of the ground system antenna contract.

Spacecraft	Launch Readiness Date	Planned Operational Date
GOES-R	Oct 2015	Dec 2016
GOES-S	Feb 2017	Apr 2020

See the Program Change for the proposed schedule/milestones, deliverables, and budget profile.

Polar-orbiting Operational Environmental Satellite Programs

The goals of the Polar-orbiting Operational Environmental Satellite programs are to continue the procurement of spacecraft, instruments, launch services, and ground systems equipment necessary to maintain an uninterrupted flow of environmental data to users.

Polar satellites provide a continuous flow of global environmental observations in support of operational requirements for:

- Environmental monitoring, and weather and marine forecasting;
- Climate assessment and change prediction;
- Detecting weather systems and significant environmental events such as volcanic eruptions, oil spills, and wildfires;
- Measuring atmospheric ozone and the space environment;
- Collecting environmental data from other surface platforms such as buoys; and
- Performing search and rescue functions.

POLAR-ORBITING OPERATIONAL ENVIRONMENTAL SATELLITE (POES)

(<http://www.oso.noaa.gov/poes/>)

POES is NOAA's current operational polar satellite system, with the last satellite in the series (NOAA 19), launched on February 6, 2009. As part of an international agreement with the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), the POES program also includes the European Polar Weather Satellite program, MetOp. These satellites carry U.S. instruments and provide data services coverage from a mid-morning polar-orbit through 2020.

NOAA has the responsibility to provide forecasts and warnings for the United States, its territories, adjacent waters and ocean area; for the protection of life and property and the enhancement of the national economy. This mission requires an enduring capability to acquire global data from satellites, and the capability to process and disseminate environmental data on an extensive spatial range (global, regional and local) within a variety of time scales (minutes to days) to central processing centers and distributed direct users. These data include, but are not limited to: global imagery; cloud and precipitation parameters; atmospheric profiles of temperature, moisture, wind, aerosols and ozone; surface conditions concerning ice, snow and vegetation; ocean parameters of sea temperature, color and state; and solar and in-situ space environment conditions.

These data are critical for:

- Severe storm and flood warnings;
- Tropical cyclone and hurricane reconnaissance and warnings; Hydrologic forecasts and forecasts of the ocean surface and internal structures;
- Medium range weather forecast (out to fifteen days);
- Solar and space environmental forecasts;
- Aviation forecasts (domestic, military, and international);
- Forecasts of ice conditions;
- Seasonal and inter-annual climate forecasts;
- Decadal-scale monitoring of climate variability;
- Assessment of long-term global environmental change;
- Environmental air quality monitoring and emergency response;
- Detection and analysis of fires and volcanic eruptions; and
- Short-term and mesoscale forecasts.

Continued funding supports:

- Satellite and instrument anomaly support to the on-orbit POES satellites;
- Maintaining the ground system for their operations; and
- The procurement, maintenance and testing of the U.S. instruments on the European MetOp satellites.

See the Program Change for the proposed schedule/milestones, deliverables, and budget profile.

SATELLITE ALTIMETRY MISSION – JASON-3

Jason-3 is a joint NOAA-EUMETSAT satellite altimetry mission which will provide continuity of precise measurement of sea [ocean] surface heights for applications in:

- Ocean Climatology: Global sea-level rise, Decadal variability in the ocean, Seasonal/inter-annual variability, and Coastal variability & its impact on ecosystems.
- Ocean Weather: Operational Oceanography, Surface wave forecasting & evaluation, and Hurricane intensity forecasting.

Jason-3 is a five-year development and integration effort that started in FY 2010. NOAA will provide a microwave radiometer, precision orbit determination components (e.g. GPS, Laser Retroreflector Array (LRA)), launch services, ground system and operations, and associated engineering services for Jason-3. Through an interagency agreement, NASA will be NOAA's acquisition and development agent in meeting our defined roles and responsibilities, but NOAA will retain overall program management responsibility. EUMETSAT will provide the spacecraft, altimeter, additional precision orbit components, ground system and operations.

Jason-3 will follow in the tradition of the previous altimetry missions, Topex/Poseidon, Jason 1 and 2. The Jason series has been transitioned as a research endeavor from NASA and the Centre National d'Etudes Spatiales (CNES), the French Space Agency, to NOAA and EUMETSAT for joint implementation as a sustained and systematic (i.e. operational) capability.

NASA on behalf of NESS has started acquisition of the mission instruments and started a feasibility study to identify a suitable launch vehicle.

Continued funding supports the ongoing acquisition of Jason-3 components and launch services to ensure a launch of Jason-3 in 2014.

See the Program Change for the proposed schedule/milestones, deliverables, and budget profile.

JOINT POLAR SATELLITE SYSTEM (JPSS) (FORMERLY NATIONAL POLAR-ORBITING OPERATIONAL ENVIRONMENTAL SATELLITE SYSTEM (NPOESS))

Presidential Decision Directive (PDD/NSTC-2, Convergence of US Polar-Orbiting Operational Environmental Satellite Systems, May 5, 1994) directed the Department of Commerce (DOC), Department of Defense (DOD), and National Aeronautics and Space Administration (NASA) to establish the NPOESS program. This decision integrated the Nation's civil (NOAA's POES) and military (DOD's DMSP) polar-orbiting meteorological satellite systems into a single, national system capable of satisfying both civil and national security requirements for space-based, remotely sensed environmental data. As a result, NOAA, DOD, and NASA formed a tri-agency Integrated Program Office (IPO) to develop, manage, acquire, and operate the new polar satellite system called NPOESS.

In February 2010 the Administration announced a major restructuring of the program, with DOD managing satellite acquisition for the morning orbit and NOAA—with the assistance of NASA—managing acquisition for the afternoon orbit. NOAA/NASA will continue to provide joint ground system support, and DOD will continue to provide early morning data sets to NOAA's numerical weather models.

JPSS will address NOAA's requirements to provide global environmental data such as cloud imagery, sea surface temperature, atmospheric profiles of temperature and moisture, atmospheric ozone concentrations, search and rescue, direct read-out, and data collection services. These data are used in numerical weather prediction models for near term (1-3 day) and mid-term (3-5 day) forecasts and used to provide data on monitoring climate change.

JPSS will continue the continuity of polar satellite coverage and will improve the nation's ability to collect and distribute higher resolution data and products. This is achieved through the modernization of sensors and systems to ensure improved performance, compatibility, supportability, and maintainability. This data will improve weather forecasts, climate monitoring, and warning lead times for severe storms benefiting agriculture, transportation, and energy production.

See the Program Change for the proposed schedule/milestones, deliverables, and budget profile.

CRITICAL SINGLE POINT OF FAILURE/CRITICAL INFRASTRUCTURE PROTECTION (CIP)

The Critical Infrastructure Protection project will provide backup systems at the Wallops Command and Data Acquisition Station (WCDAS) and will perform all mission critical operations and critical product data processing functions in the event of a catastrophic outage at the NSOF primary site.

The CIP is a backup facility to the NSOF/Environmental Satellite Processing Center operations to ensure the continuity of the nation's environmental satellite data images and critical products used by the NWS and DoD as inputs to analyses and forecast models. CIP will ensure continuity of the issuance of life-saving NWS watches and short-term warnings to the public in the event the primary ESPC system at the NSOF becomes inoperable.

The NOAA Product Processing and Distribution (PP&D) Office is a critical single point of failure for every operational NOAA satellite product and service that NWS and other users rely on for weather information. Satellite data represents more than 99 percent of the input to numerical weather prediction models. Satellite products and services include: POES products such as ozone, temperature and moisture measurements; GOES Advanced Weather Interactive Processing System (AWIPS) remapped imagery, high density winds, precipitation estimates; and non-NOAA satellite products from NASA, the DoD, Europe, Japan, and India.

Schedule and Milestones:

- FY11: Complete upgrade of communication links
Set-up and testing of the Infrared Atmospheric Sounding Interferometer IASI and ASCAT
Failover testing from NSOF to the OSDPD Backup Facility; and system documentation and operator training and become steady state
- FY12 –16: Build back-up systems for ESPC applications in order to address Research to Operations missions and continuing evolution of the OSDPD/ESPC systems and products.

Deliverables:

- The CIP project will provide backup systems and will perform mission critical operations and critical product data processing functions in the event of a catastrophic outage of the primary site satellite operations facility at NSOF.

Performance Goals and Measurement Data

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
% of primary satellite data processed and distributed in the event of a catastrophic outage at the NSOF primary site	90%	90%	90%	95%	95%	95%
Description: Provide satellite data processing backup in the event of a catastrophic outage of the primary satellite operations facility at NSOF. Primary satellite data is data that has been approved for CIP backup by the Satellite Products and Services Review Board (SPSRB).						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
% of satellite data processed and distributed within 4 hours of CIP activation	90%	90%	90%	90%	90%	90%
Description: The CIP requirement is to have Priority 1 operational products available within 24 hours of CIP activation (complete product list in found at http://www.osdpd.noaa.gov/ml/cip.html).						

Outyear Funding Estimates (BA in thousands)

CIP	FY 2011 & Prior	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	CTC	Total
Change from FY 2012 Base		-	-	-	-	-		
Total Request	\$24,891	\$2,772	TBD	TBD	TBD	TBD	TBD	TBD

NPOESS PREPARATORY DATA EXPLOITATION (NDE): The NDE project will develop and implement capabilities to process and distribute NPP and Joint Polar Satellite System (JPSS) products and services, once the data have been delivered to NOAA. NOAA must implement capabilities to process the observations into useful products that meet the requirements of NOAA's operational centers and other civilian users. The NDE program will generate measurements of atmospheric and surface properties with smaller biases and less noise that will improve and extend the NWS's capability to provide weather forecasts and warnings. NESS and the NWS have collaborated to establish a priority for NDE product developments. As a result, the NDE program will provide the capability to generate the following data products for NOAA within two years after the NPP launch: atmospheric and ocean surface radiances, snow cover, sea surface temperature, vegetation fraction, tropical cyclone products, polar winds, atmospheric moisture, ocean color and ozone profiles.

The NDE project will develop the IT infrastructure and science code necessary to ingest and add value to NPP and JPSS observations. In FY 2011, NDE will procure and integrate the NPP

Production Environment, a data processing system designated to address the unique needs of the NOAA user community. Once validation and verification of the system and science products are complete, the Production Environment will be turned over to NESS Operations who will then assume 24x7 operations in FY 2012. The performance of this IT system will also be evaluated during the NPP post-launch period in FY 2012. Following the transition of the NPP Production Environment to operations, NDE will focus development on new NPP-based products and on the procurement and test of the JPSS Production Environment to prepare for the first JPSS mission. A similar period of IT systems evaluation will follow the JPSS 1 launch and will culminate in the transition of the Production Environment to NESS Operations.

Schedule & Milestones:

- FY11: Conduct pre-launch ground segment testing
Conduct Launch Readiness Review for NPP
- FY12: Conduct post launch evaluation of the NDE Production Environment (PE) following the NPP launch.
Initiate the transition of the NDE PE to NESS Operations.
- FY13: Complete transition NDE PE to NESS Operations.
Deliver first set of products to NESS Operations.
- FY14: Deliver second set of products to NESS Operations.
- FY15: Test new JPSS Data Exploitation (JDE) Production Environment (PE) using NPP data.
- FY16: Conduct Launch Readiness Review for JPSS-1.

Deliverables/Outputs:

- Initiate delivery of the NDE PE to NESS Operations in FY 12. System will enable NESS Operations to generate 57 products to the NWS and other users in FY 2012-FY 2016.

Performance Goals and Measurement Data

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Number of new Science Products Tested within NDE Science Algorithm Development and Integration Environment (SADIE)	10	12	12	10	10	10
Description: NDE integrates new science algorithms, provided by NOAA scientists, into the NDE SADIE to conduct functional and end-to-end testing of the products generated from those algorithms. Once it is determined that the code is ready for operations, NDE will transition the algorithms to the PE for routine operations. The process of testing new algorithms and integrating them into operations takes approximately one year. All algorithms listed in FY 11-15 will generate new operational products from NPP one year later.						

Outyear Funding Estimates (BA in thousands)

NPOESS Data Exploitation	FY 2011 & Prior	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	CTC	Total
Change from FY 2012 Base		-	-	-	-	-		
Total Request	\$22,651	\$4,455	TBD	TBD	TBD	TBD	TBD	TBD

RESTORATION OF CLIMATE SENSORS

NOAA will continue the development of the remanifested climate sensors: the Total Solar Irradiance Sensor (TSIS), the Clouds and Earth's Radiant Energy System (CERES), and the Ozone Mapping and Profiler Suite-Limb (OMPS-Limb) sensor. TSIS, CERES/ERBS, and OMPS-Limb sensors were de-manifested from the National Polar-orbiting Operational Environmental Satellite System (NPOESS) as a result of the Nunn-McCurdy restructuring of the program in 2006. However, because of the Nation's critical need for climate measurements, these development efforts for these sensors have been re-started for delivery to the Joint Polar Satellite System (JPSS) Program.

These sensors will ensure NOAA continues to provide current, accurate, relevant and timely climate information to the scientific community and other interested parties through the monitoring of atmospheric conditions (including carbon dioxide, sulfur dioxide, nitrous oxide, water vapor, methane, ozone, soot, and aerosols), measurements of solar energy reaching the Earth's atmosphere (radiative forcing), and the Earth's reflected and radiated energy. These measurements are performed most accurately above the Earth's atmosphere via space-borne instruments. Without these sensors, alternative and less accurate methods would have to be employed to understand climate variability and change, severely impacting NOAA's ability to discriminate the anthropogenic effects from natural climate variability.

The 2007 National Research Council Decadal Survey Report: *Earth Science and Applications from Space: National Imperatives for the Next Decade and Beyond* identifies TSIS, ERBS, and OMPS-limb as critical climate continuity sensors. These sensors represent critical elements of the Earth Climate Observation System. Developing these sensors will ensure the continuity of the climate data records for solar irradiance, earth energy budget, and ozone. These instruments were also identified as the top priority by the joint NOAA-NASA climate assessment in January 2007. Therefore, the continuation of the data sets from these climate instruments is critical to climate change research and understanding the impacts of climate change. The prospects of such climate changes have profound implications for global society and the environment, underscoring the need for information derived from these instruments to aid decision makers in developing and evaluating options for mitigating the impacts of climate change as well as alternatives for adapting to a changing climate.

See the Program Change for the proposed schedule/milestones, deliverables, and budget profile.

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PROGRAM CHANGES FOR FY 2012:

Jason-3 (Base Funding: 0 FTE and \$20,000,000; Program Change: +0 FTE and +\$33,000,000):

NOAA requests an increase of \$33,000,000 and 0 FTE for a total of \$53,000,000 and 0 FTE to provide continuity of precise measurement of sea surface heights for applications in ocean climatology and ocean weather. Jason-type satellite altimetry is the only proven technique for monitoring global sea level rise, a key indicator of climate change. Jason-2 continues the systematic collection of sea level observations initiated by *TOPEX/Poseidon* in 1992. The Jason-3 satellite will be functionally equivalent to the Jason-2 satellite

Proposed Actions:

NOAA will provide a microwave radiometer, precision orbit determination components (e.g. GPS), launch services, and associated engineering services for Jason-3. Through an interagency agreement, NASA will be NOAA's acquisition and development agent in meeting our defined roles and responsibilities, but NOAA will retain overall program management responsibility. EUMETSAT and CNES will provide the spacecraft, altimeter, precision orbit components, ground system, and operations.

Statement of Need and Economic Benefits:

While its latest projections for Global sea-level rise (GSLR) over the coming century range from 28 to 79 cm, the Intergovernmental Panel for Climate Change (IPCC) states "...*the upper values of the ranges given are not to be considered upper bounds...*" for GSLR because existing models are unable to account for uncertainties such as changes in ice sheet flow. Additionally, the U.S. Climate Change Science Program has recently stated that these uncertainties "...*will likely lead to sea-level projections for the end of the 21st century that substantially exceed the [latest IPCC] projection.*" Because this will impact the 146 million people worldwide living within 1 meter of mean high water, it is critical that systematic observations of global sea level be collected on a continuing basis until these uncertainties are successfully addressed.

The Jason-3 Altimetry mission is needed to provide continuity of precise measurement of sea surface heights for applications in the areas of Ocean Climatology and Ocean Weather.

- Ocean Climatology Benefits:
 - Global sea-level rise - A fundamental indicator of climate change. Altimeter time series of several decades will be needed to distinguish signals related to anthropogenic warming from those related to natural variability, as well as to clarify whether the rate of sea-level rise is accelerating.
 - Decadal variability in the ocean - Has been shown to have an impact on fishery regime changes and correlates with droughts on land and changes in hurricane activity.
 - Seasonal/inter-annual variability - On seasonal to inter-annual timescales, ocean-atmosphere interactions in the tropical Pacific, the El Nino / Southern Oscillation (ENSO) phenomena, currently provide much of the signal for seasonal forecasts.
 - Coastal variability and its impact on ecosystems - Provide observations for modelling the ocean basin and the broader coastal area. Coastal forecasting is needed in responding to environmental problems such as oil spills and harmful algae blooms, as well as forecasting tides and currents important to commercial shipping.
- Ocean Weather Benefits
 - Operational Oceanography - Input to operational integrative services based on global and regional ocean models that provide real time and prognostic information on the state of the global ocean. This capability helps its users understand and monitor the

world's marine environment and facilitate a safe, non-polluting and sustainable human exploitation of the ocean environment.

- Surface wave forecasting and evaluation - Accurate surface wave forecasts are a major requirement for offshore operators. Over the last decade altimeter-derived significant wave height data have been critical for improvements in wave prediction systems.
- Hurricane intensity forecasting - The knowledge of the upper ocean heat content (OHC) is a critical factor in forecasting the intensity of hurricanes as they approach the U.S. east and Gulf coasts where high OHC is quite variable.

Base Resource Assessment:

Base resource assessment is provided in the Program Summary for the Jason-3 program.

Schedule and Milestones:

- FY12: Begin Phase D (Integration and Test)
Deliver Advanced Microwave Radiometer (AMR), Global Positioning System (GPS) and Laser RetroReflector Array (LRA) to Europe
Support spacecraft integration and test
- FY13: Complete Launch Vehicle development and deliver to launch site
Support S/C to L/V integration and pre-launch preparations
- FY14: Launch Jason-3, begin routine operations
Begin Phase E (Launch and Operations)
Commission the S/C and instruments and start all required Calibration/Validation activities to measure Sea Surface Height to accuracy at 3-4 cm
- FY14 - 16: Complete Calibration/Validation activities and support production and distribution of operational and long-term science products.

Deliverables:

- NOAA will provide a microwave radiometer, precision orbit determination components (e.g. GPS), launch services, and associated engineering services for Jason-3.
- Continue 20 plus years of sea level observations, a critical climate monitoring variable, and provide operational ocean weather products using Jason 3 observations.

Performance Goals and Measurement Data

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Number of ocean science products produced	Target	Target	Target	Target	Target	Target
With Increase	0	0	0	5	5	5
Without Increase	0	0	0	0	0	0
Description: Jason-3 altimetry products will provide important data for ocean climatology studies and ocean weather forecasting as defined above under the Statement of Need and Economic Benefits. Products are Sea Level Height, El Nino Forecasting, Hurricane Intensity Forecasting, Ocean Waveheight Forecast, and Ocean Surface Current.						

Outyear Funding Estimates (BA in thousands)

Jason-3	FY 2011 & Prior	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	CTC	Total
Change from FY 2012 Base		\$33,000						
Total Request	\$40,000	\$53,000	TBD	TBD	TBD	TBD	TBD	TBD

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Jason-3
Subactivity: Systems Acquisition

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	33,000
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	33,000

Joint Polar Satellite System (JPSS) (Base Funding: 61 FTE and \$382,200,000; Program Change: +0 FTE and +\$687,800,000): NOAA requests an increase of \$687,800,000 and 0 FTE for a total of \$1,070,000 and 61 FTE to continue development of the Joint Polar Satellite System (JPSS) instruments, the ground systems, and the spacecraft for the afternoon orbit for the JPSS program.

The JPSS program continues a number of management and acquisition reforms initiated in FY 2010 to deliver polar observations necessary to meet both the civil and military needs for weather and climate information. To implement the restructured JPSS program as directed by Executive Office of the President in February 2010, NOAA will oversee program management while NASA will provide technical management as the acquisition agent. NOAA and NASA will share the mission success responsibility. Mission success includes building all instruments, launching the spacecraft, algorithm development, ground systems development, and all other program-related activities that are essential to the success of the JPSS program.

Proposed Actions:

The total appropriated FY 2012 funds will be provided directly to NOAA, who will provide the funding to NASA to continue instrument, ground systems, satellite procurements, and other program-related activities to meet the program milestones and launch dates which will be determined by NOAA. Specifically, funds will:

- Continue to develop the suite of instruments originally planned for the NPOESS mission (VIIRS, CrIS, ATMS, and OMPS)
- Acquire a satellite bus for the afternoon orbit
- Continue to develop a common ground system for the civil and military polar observations

Statement of Need and Economic Benefits:

A successful JPSS will continue to improve the nation's ability to collect and distribute higher resolution data and products. This is achieved through the modernization of sensors and systems to ensure improved performance, compatibility, supportability, and maintainability. The JPSS will improve forecasts, climate monitoring, and warning lead times for severe storms, benefiting sectors such as agriculture, transportation, and energy production.

Data and imagery obtained from JPSS satellites will help increase timeliness, accuracy, and cost-effectiveness of public warnings and forecasts of climate and weather events. This program serves the National Weather Service by providing continuous global temperature and humidity values from polar satellites that provide critical inputs for quality three to five day and long-range temperature, precipitation, and snow forecasts. Polar satellites also monitor the global sea surface temperature, indicating the location, onset, and severity of El Nino and La Nina events as early as possible. Longer lead times of these impending events allow emergency and agricultural managers to activate plans to reduce the impacts of floods, landslides, fires, oil spills, volcanic eruptions, and droughts, thus reducing the potential loss of human life and property.

Base Resource Assessment:

Base resource assessment is provided in the Program Summary for the JPSS program.

Schedule & Milestones:

- FY12: Continue instrument and satellite bus procurements, ground system development, and begin procurement of JPSS-1 launch vehicle
Launch NPP
- FY15: Deliver first set of instruments for the afternoon orbit

Complete development of the JPSS satellite bus

- FY16: First satellite launch readiness
- FY19: Second satellite launch readiness

These dates may be adjusted as the transition plan is developed.

Deliverables:

- Deliver NPP launch readiness in FY11
- Deliver VIIRS, CrIS, OMPS, and ATMS instruments in FY15 to support a FY16 launch readiness of the first JPSS afternoon orbit satellite

Performance Goals and Measurement Data

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Percent of forecast warnings and nowcasts supported under 28 minutes data latency						
With Increase	0%	95%	95%	95%	95%	95%
Without Increase	0%	95%	95%	95%	95%	95%
Description: This measure reflects the JPSS program, existing satellites and NPP. JPSS-1 will continue to meet these targets after launch. JPSS-1 launch readiness is FY 2016; therefore a decrease in performance is expected after FY2016 without the increase.						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Percent of data availability to support NOAA operational needs						
With Increase	0%	99.95%	99.95%	99.95%	99.95%	99.95%
Without Increase	0%	99.95%	99.95%	99.95%	99.95%	99.95%
Description: This measure reflects the JPSS program, existing satellites and NPP data availability to support civilian and military operational needs. JPSS-1 will continue to meet targets after launch. JPSS-1 launch readiness is FY 2016; therefore a decrease in performance is expected after FY2016 without the increase.						

Outyear Funding Estimates (BA in thousands)

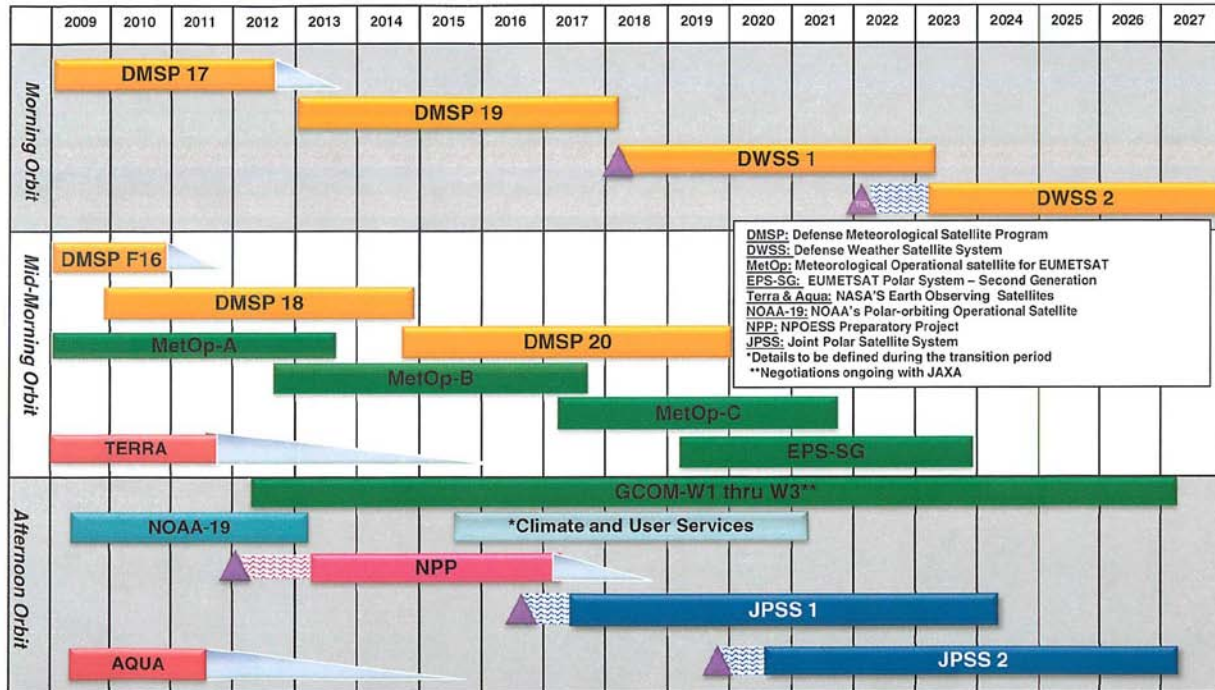
JPSS	FY 2011 & Prior	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	CTC	Total
Change from FY 2012 Base		\$687,800						
Total Request	\$3,290,694	\$1,070,000	TBD	TBD	TBD	TBD	TBD	TBD



Continuity of Polar Operational Satellite Programs

Fiscal Year

As of January 14, 2011



Approved: *M. E. King*
 Assistant Administrator for
 Satellite and Information Services

Operational Satellites
 Post Launch Test Launch Readiness Date Operational beyond design life

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: JPSS
Subactivity: Systems Acquisition

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	687,800
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	687,800

Deep Space Climate Observatory (DSCOVR) (Base Funding: 0 FTE and \$0; Program Change: +0 FTE and +\$47,300,000): NOAA requests an increase of \$47,300,000 and 0 FTE for a total of \$47,300,000 and 0 FTE in FY 2012 to maintain continuity of solar wind data used for geomagnetic storm warnings by refurbishing the DSCOVR satellite and developing a Coronal Mass Ejection (CME) imager.

Proposed Actions:

FY 2012 funds will support the refurbishment of an existing NASA Satellite, DSCOVR, by the NASA/Goddard Space Flight Center (GSFC). The DSCOVR satellite is currently housed at GSFC in Greenbelt, Maryland. Funds will also support the Naval Research Laboratory in the continued development and build of a CME imager instrument necessary for geomagnetic storm warnings.

In 2008, NASA tested the condition of the DSCOVR spacecraft and sensors to determine the feasibility of refurbishing the DSCOVR mission for flight. The FY 2012 budget request is consistent with the results of NASA's test, which are documented in the NASA *Serotine Report*. The White House Office of Science and Technology Policy supported the initiative to refurbish DSCOVR consistent with the Serotine Report recommendations, and a recommendation made by the interagency Committee on Space Environmental Sensor Mitigation Options (CSESMO). This program is being done in partnership with the U.S. Air Force (USAF), which will provide launch vehicle and services.

Statement of Need and Economic Benefits:

Without timely and accurate alerts and warnings, space weather has the potential to disrupt virtually every major public infrastructure system, including transportation systems, power grids, telecommunications, and GPS. NOAA currently provides geomagnetic storm warnings to support key industries such as the commercial airline, electric power, and GPS industries. Much of our nation's infrastructure is based on advanced technologies that would be at significant risk without accurate 1-4 day advanced warnings of impending geomagnetic storms. According to a recent report by the National Academies (*Severe Space Weather Events – Understanding Societal and Economic Impacts*, National Research Council 2009), geomagnetic storm-disabled electric power grids and collateral impacts could result in projected economic and societal costs of approximately \$1-\$2 trillion, and full recovery could take 4 –10 years. Additionally, geomagnetic storm warnings are important for aircraft flying polar routes since such storms could impact critical communication and navigation systems, as well as subject flyers to hazardous solar radiation exposure.

The frequency and intensity of geomagnetic storms will increase significantly as the next solar maximum approaches in 2013. Strong storms with the potential to impact critical elements of our Nation's infrastructure can occur over 100 times during a solar cycle. The Nation's advanced technology service providers will be looking to NOAA for alerts, watches and warnings needed to protect lives and livelihood and ensure continuity of critical operations.

Currently, the only data source for geomagnetic storm warnings (providing 15-45 minute lead times for impending space weather storms) is NASA's Advanced Composition Explorer (ACE) satellite, which is operating 12 years past its design life. The geomagnetic storm forecasts, which provide 1-4 day warnings of impending space weather storms, use coronal mass ejection imagery received now from NASA/ESA's SOHO and NASA's STEREO satellites. Launched in 1995, 1997, and 2006, all of these satellites have exceeded their two-year design life. Without immediate action, NOAA will lose two of its most critical space weather observation data sources when the NASA ACE and the NASA/ESA SOHO satellites fail. Low reliability of the satellites and sensors and the high risk of unavailability of the data pose one of the most serious gaps for NOAA's space weather services. By refurbishing the DSCOVR satellite, NOAA will be able to continue to

provide geomagnetic storm warnings and forecasts at less cost than designing and building a new satellite.

In 2005, NOAA issued a press release informing its geomagnetic storm warning customers that the alert might be discontinued at any time due to the current data source of solar wind, the ACE satellite, being years beyond its design life. Customers were invited to respond to NOAA documenting the impact of the loss of the warning on them. Their responses were summarized in a report “Evaluation of Public Response to the Termination of Solar Wind Data”, October 2006. Members of the electrical power industry, which is vulnerable to geomagnetic storm-induced blackouts and transformer damage, have repeatedly corresponded with the Department of Commerce, the White House, and the Congress regarding their concerns for the risk posed by the potential loss in geomagnetic storm forecasting data.

Base Resource Assessment:

There are no base resources because DSCOVR is a new start.

Schedule and Milestones:

- FY12: Initiate refurbishment of DSCOVR satellite
 Initiate Solar Wind Sensor Recalibration
 Begin CME development at Naval Research Laboratory
 United States Air Force Begins Launch Vehicle Acquisition
 Reintegrate Solar Wind Sensors on DSCOVR
- FY13: Perform Spacecraft and Sensor Environmental Testing
- FY14: Launch Spacecraft
- FY14-18: Maintenance and Operations

The DSCOVR mission expected end of life is 2018.

Deliverables:

- FY13: CME imager delivered, DSCOVR refurbished
- FY14: Launch vehicle, operational solar wind and data and CME imagery received

Performance Goals and Measurement Data

Performance Measure:	FY	FY	FY	FY	FY	FY
Lead Time Storm Warnings (minutes)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Increase	40	40	40	40	40	40
Without Increase	40	40	40	0	0	0
Description: This measure is a Space Weather Prediction Center (SWPC) performance measure that represents the average number of minutes of warning before geomagnetic storm arrival. Once SWPC receives real-time data regarding geomagnetic storm arrival, the alert is posted on their website and email alerts are sent to customers that subscribe. SWPC will also phone high impact customers such as FEMA, Coast Guard, power distributors, airlines, etc. Measure also assumes ACE continues until the launch of DSCOVR.						

Performance Measure:	FY	FY	FY	FY	FY	FY
% Warnings Issued Prior to Storm	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Increase	100%	100%	100%	100%	100%	100%
Without Increase	100%	100%	100%	0	0	0
Description: This measure is a SWPC performance measure that ensures issuance of warnings for all geomagnetic storms. Once SWPC receives real-time data regarding geomagnetic storm arrival, the alert is posted on their website and email alerts are sent to customers. SWPC will also phone high impact customers such as FEMA, Coast Guard, power distributors, airlines, etc. Measure also assumes ACE continues until the launch of DSCOV. R.						

Performance Measure:	FY	FY	FY	FY	FY	FY
% Alerts Delivered within 10 minutes of onset	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Increase	98%	98%	98%	98%	98%	98%
Without Increase	98%	98%	98%	0	0	0
Description: This measure is a SWPC performance measure that shows what percentage of alerts get out at least 10 minutes prior to the storm. Once SWPC receives real-time data regarding geomagnetic storm arrival, the alert is posted on their website and email alerts are sent to customers. SWPC will also phone high impact customers such as FEMA, Coast Guard, power distributors, airlines, etc. Measure also assumes ACE continues until the launch of DSCOV. R.						

Outyear Funding Estimates (BA in thousands)

DSCOV	FY	FY	FY	FY	FY	FY	CTC	Total
	2011 &	2012	2013	2014	2015	2016		
	Prior							
Change from FY 2012 Base		\$47,300						
Total Request	\$0	\$47,300	TBD	TBD	TBD	TBD	TBD	TBD

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: DSCOV
Subactivity: Systems Acquisition

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	47,300
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	47,300

Constellation Observing System for Meteorology Ionosphere and Climate-2 (COSMIC-2) **(Base Funding: 0 FTE and \$0; Program Change: +0 FTE and +\$11,300,000)**: NOAA requests an increase of \$11,300,000 and 0 FTE for a total of \$11,300,000 and 0 FTE to collaborate with the Taiwan National Space Organization (NSPO) for the launch of 12 satellites which will provide replenishment and operational upgrade to the current COSMIC constellation.

Proposed Actions:

NOAA will procure 12 radio occultation (RO) sensors, provide ground station support, add tracking station capabilities in order to lower latency, and sensor processing support. Taiwan will provide the spacecraft and integrate the sensors onto them. During FY 2012, NOAA would enter into contracts with Jet Propulsion Lab (JPL) and the COSMIC-2 instrument development vendor for the first 6 RO sensors. NOAA will also begin development of the engineering design for the ground network.

Statement of Need and Economic Benefits:

The COSMIC program is a cost effective means of obtaining global atmospheric temperature profiles. This data is currently used to determine high accuracy atmospheric temperatures at various altitudes that improve weather forecasts, and have demonstrated an 8+ hours forecast improvement starting at day four in the forecast model. This data is not available globally from other sources and losing this data will result in a significant degradation of performance of NOAA's numerical weather models. COSMIC helps to eliminate bias for artificial offsets in other observing systems by helping to create consistent measurements from different systems. This advances the overall impact on operational weather models and makes COSMIC a backbone for the total observing system.

The National Center for Environmental Prediction (NCEP) has documented measureable forecast improvements using GPS Radio Occultation (GPSRO) data (Cucurull, Derber, 2008). GPSRO data provides unique advantages that can be leveraged to improve data collected from existing NOAA sensors. GPSRO also significantly increases the volume of quality observed global atmospheric soundings, providing temperature, water vapor, and pressure profiles. In some cases (e.g., ionospheric electron density profiles), COSMIC data fills a void of observations where they do not exist now and can lead to improved NOAA space weather services.

Approximately 1,000 radiosondes are launched in the world each day, typically over land. COSMIC provides more global coverage with an additional 2,000 soundings per day that have an even distribution and accuracy rate over the ocean and land. COSMIC-2 will provide over 8,000 soundings per day, significantly increasing the volume of quality observed global atmospheric soundings which result in more accurate long range forecasts. In addition, COSMIC-2 will provide vertical temperature and moisture sounding information over the tropics that will be an essential data system for tropical storm prediction as storms develop over the open oceans.

The National Weather Service mid- and long-range forecasts for large storms and extreme rain and snowfall events have become highly accurate with COSMIC's contributions. These forecasts provide tangible and substantial benefits to national commerce and transportation. For example, during the winter storms in February 2010, excellent forecast skill allowed for federal, state, and local contingency planning; enabled airlines to cancel flights and decision makers to close airports; and alerted ground transportation and retail industries to accelerate deliveries and stock up on critical supplies before the storms hit. COSMIC has been one of the largest game changers over the past five years, enabling early detection of extreme weather events that have significant socioeconomic impacts.

Base Resource Assessment:

There are no base resources because COSMIC is a new start.

Schedule and Milestones:

- FY12-14: Complete 6 RO Sensors, complete ground system enhancements
- FY15: First Launch
- FY15-16: Complete second set of 6 RO Sensors
- FY17: Second Launch

Deliverables:

- Develop, launch, and operate a 12-satellite constellation producing atmospheric profile products from the troposphere through the ionosphere in coordination with the Taiwan National Space Organization.

Performance Goals and Measurement Data

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Day 4 Forecast Improvement (hours)	Target	Target	Target	Target	Target	Target
With Increase	0	0	0	0	0	0
Without Increase	0	0	0	0	-8	-8

Description: Provide real-time atmospheric and temperature data from the COSMIC constellation to maintain 8 hour improvement in the Day 4 weather forecast. The targets for FY11 -14 are dependent on the original COSMIC constellation, which is designed to last until the end in 2011 but we expect will continue to provide data through 2014.

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Day 7 Forecast Improvement (hours)	Target	Target	Target	Target	Target	Target
With Increase	0	0	0	0	0	0
Without Increase	0	0	0	0	-15	-15

Description: Provide real-time atmospheric and temperature data from the COSMIC constellation for Day 7 weather forecast improvement. The targets for FY011 -14 are dependent on the original COSMIC constellation, which is designed to last until the end in 2011 but we expect will continue to provide data through 2014.

Outyear Funding Estimates (BA in thousands)

COSMIC-2	FY 2011 & Prior	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	CTC	Total
Change from FY 2012 Base		\$11,300						
Total Request	\$0	\$11,300	TBD	TBD	TBD	TBD	TBD	TBD

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: COSMIC-2
Subactivity: Systems Acquisition

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	11,300
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	11,300

Restoration of Climate Sensors (Base Funding: 0 FTE and \$0; Program Change: +0 FTE and \$30,400,000): NOAA requests an increase of \$30,400,000 and 0 FTE for a total of \$30,400,000 and 0 FTE in FY 2012 to support the continued development of Clouds and the Earth's Radiant Energy System Flight Model 6 (CERES FM-6) and the Total Solar and Spectral Irradiance Sensor (TSIS).

Proposed Actions:

This request continues the development of the climate sensors to be incorporated into the JPSS program. Specifically, funds support the continued development of CERES FM-6 and TSIS instruments. The sensors under development are based on the NASA Earth Observing System (EOS) heritage designs to maintain the data continuity started by EOS that is required to accurately assess long-term changes in the Earth's climate. NASA will be NOAA's acquisition agent in procuring the Climate Sensors and will hold the contracts with vendors, under an Interagency Agreement. However, NOAA will retain overall program management responsibility.

Statement of Need and Economic Benefits:

These sensors will maintain and improve the Nation's ability to collect and distribute higher resolution climate data and products. This is achieved through the modernization of sensors and systems to ensure better performance, compatibility, supportability, and maintainability. These sensors will ensure NOAA continues to provide current, accurate, relevant and timely climate information to the scientific community and other interested parties through the monitoring of atmospheric conditions (including carbon dioxide, sulfur dioxide, nitrous oxide, water vapor, methane, ozone, soot, and aerosols), and measurements of radiative forcing (solar energy reaching the Earth's atmosphere) and the Earth's reflected and radiated energy. Climate forecasts and monitoring will be improved, thus benefiting agriculture, transportation, and energy production.

The continuation of the data sets from these climate instruments is critical to climate change research and understanding the impacts of climate change. The prospects of such climate changes have profound implications for the global society and environment, underscoring the need for information derived from these instruments to aid decision makers in developing and evaluating options for mitigating the impacts of climate change as well as alternatives for adapting to a changing climate.

The 2007 National Research Council Decadal Survey Report: *Earth Science and Applications from Space: National Imperatives for the Next Decade and Beyond* identifies TSIS, ERBS, and OMPS-limb as critical climate continuity sensors. These sensors represent critical elements of the Earth Climate Observation System. Developing these sensors will ensure the continuity of the climate data records for solar irradiance, earth energy budget, and ozone. These instruments were also identified as the top priority by the joint NOAA-NASA climate assessment in January 2007.

Base Resource Assessment:

Base resource assessment is provided in the Program Summary for the Climate Sensor program.

Schedule and Milestones:

- FY12: Continue instrument development for CERES FM6 and TSIS #1.
- FY13: Continue CERES FM6 and TSIS #1 instrument development. Initiate OMPS-L and TSIS #2 development.
- FY14: Deliver and integrate CERES FM-6 and TSIS #1 into JPSS program, continue OMPS-L and TSIS #2 instrument developments.

- FY15 Continue TSIS #2 and OMPS-L
- FY16: Deliver and integrate OMPS-L and TSIS #2 on JPSS 2.

Deliverables:

- FY14: Deliver CERES FM-6 and TSIS #1 to JPSS
- FY16: Deliver OMPS-L and TSIS #2 to JPSS 2

Performance Goals and Measurement Data

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Long-term CDR's in support of the USGCRP national assessment supported by CERES.	Target	Target	Target	Target	Target	Target
With Increase	2	2	2	2	2	2
Without Increase	2	2	2	2	2	2
Description: CERES instruments will provide measurements of incoming and outgoing radiation at the top of the earth's atmosphere. CERES FM-6 will continue two critical long-term CDR's in support of the USGCRP national assessment. Without the increase, the impact is seen in FY18.						

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Long-term CDR's in support of the USGCRP national assessment supported by TSIS.	Target	Target	Target	Target	Target	Target
With Increase	2	2	2	2	2	2
Without Increase	2	2	2	2	2	2
Description: TSIS instruments will provide measurements of incoming and outgoing radiation at the top of the earth's atmosphere. Without the increase, the impact is seen in FY18.						

Outyear Funding Estimates (BA in thousands)

Restoration of Climate Sensors	FY 2011 & Prior	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	CTC	Total
Change from FY 2012 Base		\$30,400						
Total Request	\$136,985	\$30,400	TBD	TBD	TBD	TBD	TBD	TBD

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Restoration of Climate Sensors

Subactivity: Systems Acquisition

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	30,400
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>30,400</u>

GOES-N (Base Funding: 0 FTE and \$53,945,000; Program Change: -0 FTE and -\$19,978,000):
NOAA requests a decrease of 0 FTE and \$19,978,000 for a total of 20 FTE and \$33,967,000 for the GOES-N Series program.

Proposed Actions:

In addition to the planned decrease of \$8,861,000, in FY 2012, the program will:

- Permanently transfer \$2,846,000 that supported archive technical refresh to the Climate Service consistent with the transfer of the Data Centers to the Climate Service.
- Permanently transfer \$810,000 for the Radio Frequency Management Division to the Office of the Chief Information Officer.
- Realize saving of \$11,117,000 as a result of reduced NASA requirements to administer the program and savings in the ground system.

The funding decrease re-aligns the GOES-N Series total program to support handover of GOES-15 from NASA to NOAA, and provides technical management, maintenance and operations of the on-orbit assets.

Statement of Need and Economic Benefits:

Since 1975 when GOES-1 (A) was launched, the benefits derived from the GOES Program were immediate. Specifically, geostationary satellite information has become a standard tool used to generate advisories to inform the public of severe weather conditions. NWS and news stations depend on the data generated by the geostationary satellites. The images of hurricanes shown on news stations in the United States and around the world are due to these critical satellites.

The GOES-N Series program aids the public by generating timely and accurate environmental data/weather information. A primary function of the GOES Program is supporting the NWS in forecasting, tracking, and monitoring severe storms. The improved accuracy of the NWS forecasts by using GOES data for severe storms results in weather forecasting/advisories to impacted areas to ensure authorities and the public are equipped with decision-making information to protect lives and property.

The GOES Program continuity schedule was created to ensure that disruption of satellite observations do not occur that will significantly impact customers/users use of the environmental data in decision-making and development of scientific analyses that could negatively impact NOAA's ability to accomplish its mission.

Maintaining GOES continuity is necessary to provide continuous global weather monitoring from two geostationary orbital locations to provide near total Western Hemispheric coverage.

Base Resource Assessment:

Base resource assessment is provided in the Program Summary for the GOES program.

Schedule and Milestones:

The current GOES-15 has a planned operational date of 2015.

Deliverables:

The current GOES-15 has a planned operational date of 2015.

Performance Goals and Measurement Data

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Percentage of NOAA-managed satellite data processed and distributed within 15 minutes	Target	Target	Target	Target	Target	Target
With Decrease	98%	98%	98%	98%	98%	98%
Without Decrease	N/A	N/A	N/A	N/A	N/A	N/A
Description: This measure includes observations from the primary geostationary spacecraft tracked from observation through availability to the user. This measure is used to track timeliness and customer satisfaction. The targeted time for GOES is 15 minutes.						

Outyear Funding Estimates (BA in thousands)

GOES-N	FY 2011 & Prior	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	CTC	Total
Change from FY 2012 Base		(\$19,978)						
Total Request	\$2,073,368	\$33,967	TBD	TBD	TBD	TBD	TBD	TBD

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Geostationary Orbiting Systems – GOES-N
Subactivity: Systems Acquisition

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	-19,978
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	-19,978

GOES-R (Base Funding: 46 FTE and \$667,500,000; Program Change: -0 FTE and -\$50,110,000):

NOAA requests a decrease of 0 FTE and \$50,110,000 for a total of 46 FTE and \$617,390,000 to provide continued satellite engineering development and production activities for GOES-R and GOES-S, and to introduce development activities for the option satellites: GOES-T and U. This budget request for FY 2012 is for a four-satellite GOES-R (GOES-R, S, T, & U) program with enhanced capabilities above the current GOES-N, O, and P Series.

The GOES-R Series will provide continuity of GOES data coverage after the GOES-N series. GOES-R is the next-generation series of NOAA geostationary satellites and provides GOES mission continuity through 2036. The procurement of GOES satellites is a cooperative venture between NOAA and NASA. NOAA defines requirements, manages, funds, implements system integration, procures ground segments and operates the GOES satellites. NASA serves as the agency with multi-disciplinary engineering expertise, develops detailed system specifications, procures and launches the spacecraft, and assists NOAA in system integration.

Proposed Actions:

NOAA proposes to adjust the phasing of resources to better reflect where program risks are likely to occur going forward, resulting in a decreased funding requirement in FY 2012. Additionally, in FY 2010 and FY 2011, the GOES-N program will contribute \$28 million for antenna needs under the GOES-R antenna contract. This will offset \$28 million in planned GOES-R costs.

The GOES-R procurements include options for acquiring additional satellites (T and U) and instruments to realize potential savings from economies of scale. The life cycle costs for GOES-T&U of \$3,218.5 million includes all associated instruments and operations cost through 2036, increasing the current GOES-R life cycle cost estimate for a 2 satellite program of \$7,644.0 million ending in 2028 to \$10,862.5 million for a 4 satellite program ending in 2036 and assumes the probability of having two geostationary satellite imagers on orbit through that period above 80%. The archive and access function will be provided by NOAA's CLASS system. This end-to-end integration requires the acquisition, deployment, maintenance, and operations of the space, ground and launch segments.

FY 2012 GOES-R funding will be used for:

- Acquisition & Operations including continued development of GOES-R & S spacecraft and ground system. The program will complete the Critical Design Review (CDR) for the GOES-R Series spacecraft and ground system.
- Instruments already under contract: Advanced Baseline Imager (ABI), Solar Ultra Violet Imager (SUVI), Extreme Ultra Violet Sensor/X-Ray Sensor Irradiance Sensor (EXIS), Space Environmental In-Situ Suite (SEISS), and Geostationary Lightning Mapper (GLM); continued funding of Flight Models and spares for each instrument in FY 2012 and product algorithm development from the ABI Instrument for GOES-R and GOES-S satellites; and continuation of the ground system antenna contract.
- Procure and assemble GOES-T & U instruments.

GOES-R requires the funding to proceed with the procurement of GOES-T&U instruments in FY 2012 to support the launch readiness of GOES- T&U. This supports the continuity of production from GOES-R&S to T&U. Interrupting the production continuity between GOES-R&S and T&U will result in production inefficiencies, supplier discontinuities, parts obsolescence, and skilled workforce retention and/or rehiring issues.

Statement of Need and Economic Benefits:

The GOES system provides an uninterrupted, continuous flow of environmental data and information that is critical to the Nation’s weather forecasting capabilities. The needs and benefits of GOES-R series satellites are as follows:

- Maintains continuous real-time observations for severe storms, hurricanes, and weather monitoring to the Nation;
- Provides advances in NOAA’s observation capabilities for all NOAA mission goals, including improvements to coastal, space weather, and lightning observations;
- Needed as a backup to GOES 14 or 15, part of a system of two operational satellites and an on-orbit spare; and
- Incorporates key enhancements in spatial and spectral information, coverage, and timeliness to help generate more timely and accurate weather forecasts.

The GOES-R - U satellites are being developed as the follow-on to the GOES-N series. The GOES-R - U series will minimize losses to life, land and the economy by giving early warning for severe weather events, which can cause significant impacts to people and property such as:

- \$11.4 billion in average annual damage from tornadoes, hurricanes, and floods with about 100 deaths annually¹.
- Approximately \$4 billion per year is lost in economic efficiencies as a result of weather-related air traffic delays².
- \$4 and \$5 billion in losses each year due to lightning in the civilian sector with about 47 deaths and 303 injuries per year³

Base Resource Assessment:

Base resource assessment is provided in the Program Summary for the GOES-R program.

Schedule and Milestones:

Spacecraft	Launch Readiness Date	Planned Operational Date
GOES-R	Oct 2015	Dec 2016
GOES-S	Feb 2017	Apr 2020
GOES-T	Apr 2019	Mar 2025
GOES-U	Oct 2024	Jul 2028

Deliverables:

- CDR for System Level, Spacecraft and Ground System
- Delivery of first Flight Model (FM) for ABI, SEISS, GLM, and EXIS
- Continue development of software and acquisition of hardware for Ground System

¹ (Extreme Weather Sourcebook 2001: *Economic & Other Societal Impacts Related to Hurricanes, Floods, Tornadoes, Lightning, and Other U.S. Weather Phenomena*. Collaborative Program on the Societal Impacts and Economic Benefits of Weather Information, Boulder, CO)

² (NOAA, 2002: GOES-R Sounder and Imager Cost/Benefit Analysis, NOAA NESS Office of Systems Development, Silver Spring, MD)

³ (NOAA, 2004: GOES-R Sounder and Imager Cost/Benefit Analysis - Phase III. NOAA/NESS/Office of Systems Development, Silver Spring, MD).

- Continue development of Spacecraft and Antennas for Ground System

Performance Goals and Measurement Data

Performance Measure:	FY	FY	FY	FY	FY	FY
Improvement in the accuracy of hurricane intensity forecasts in the 24- to 48-hour time frame.	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Decrease	N/A	N/A	N/A	N/A	N/A	10%
Without Decrease	N/A	N/A	N/A	N/A	N/A	10%
Description: Improvement in the accuracy of hurricane intensity forecasts, in the 24-48 hour time frame, as a result of the continuous monitoring of total lightning flash rate from the GLM together with improvements in observations from the ABI.						

Performance Measure:	FY	FY	FY	FY	FY	FY
Improvement in hurricane track forecasts out to 5 day	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Decrease	0	0	0	0	0	5%
Without Decrease	0	0	0	0	0	5%
Description: Improvement in the accuracy of hurricane track forecasts, out to day 5, as a result of the continuous monitoring of total lightning flash rate from the GLM together with improvements in observations from the ABI.						

Performance Measure:	FY	FY	FY	FY	FY	FY
Improvement in tornado warning lead times (in minutes)	2011	2012	2013	2014	2015	2016
	Target	Target	Target	Target	Target	Target
With Decrease	0	0	0	0	0	7
Without Decrease	0	0	0	0	0	7
Description: Improvement in the tornado warning lead time as a result of the continuous monitoring of total lightning flash rate from the GLM. .						

Outyear Funding Estimates (BA in thousands)

GOES-R	FY 2011	FY 2012	FY	FY	FY	FY	CTC	Total
	& Prior		2013	2014	2015	2016		
Change from FY 2012 Base		(\$50,110)						
Total Request	\$2,798,044	\$617,390	TBD	TBD	TBD	TBD	TBD	TBD

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Geostationary Orbiting Systems – GOES-R

Subactivity: Systems Acquisition

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	-50,110
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	-50,110

Polar Operational Environmental Satellite Systems (POES) NOAA Polar K-N' (Base Funding: 22 FTE and \$43,135,000; Program Change: -0 FTE and -\$8,319,000): NOAA requests a decrease of \$8,319,000 and 0 FTE for a total of \$34,816,000 and 22 FTE for the continuation of the POES program, and continued support for the MetOp program. The revised funding requirement represents recently identified savings as a result of the successful launch of the last POES satellite, NOAA-19, in February 2009.

Proposed Actions:

Continued funding in FY 2012 will provide satellite and instrument anomaly support to the on-orbit POES satellites, maintain ground system for their operations, and support the procurement, maintenance and testing of the U.S. instruments on the European MetOp satellites.

Statement of Need and Economic Benefits:

NOAA has the responsibility to provide forecasts and warnings for the United States, its territories, adjacent waters and ocean area, for the protection of life and property and the enhancement of the national economy. This mission requires an enduring capability to acquire global data from satellites, and the capability to process and disseminate to central processing centers and distributed direct users, environmental data on an extensive spatial range (global, regional and local) within a variety of time scales (minutes to days). These data include, but are not limited to: global imagery; cloud and precipitation parameters; atmospheric profiles of temperature, moisture, wind, aerosols and ozone; surface conditions concerning ice, snow and vegetation; ocean parameters of sea temperature, color and state; solar and in-situ space environment conditions.

These data are critically needed for:

- Severe storm and flood warnings;
- Tropical cyclone and hurricane reconnaissance and warnings;
- Hydrologic forecasts and forecasts of the ocean surface and internal structures;
- Medium range weather forecast (out to fifteen days);
- Solar and space environmental forecasts;
- Aviation forecasts (domestic, military, and international);
- Forecasts of ice conditions;
- Seasonal and inter-annual climate forecasts;
- Decadal-scale monitoring of climate variability;
- Assessment of long-term global environmental change;
- Environmental air quality monitoring and emergency response;
- Detection and analysis of fires and volcanic eruptions; and
- Short-term and mesoscale forecasts.

Base Resource Assessment:

Base resource assessment is provided in the Program Summary for the POES program.

Schedule and Milestones:

- FY12: Continue on-orbit support for NOAA-19 and provide support for MetOp-B Launch
- FY13 - 15: Support annual reactivation for MetOp-C
- FY16: Prepare to support the launch of MetOp-C

Deliverables:

- Engineering support for the on orbit POES satellites and support to EUMETSAT for U.S. instruments for MetOp satellites, either in orbit or waiting to be launched.

Performance Goals and Measurement Data

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Provide polar satellite observations to users from at least one orbit within 3 hours of observation.	Target	Target	Target	Target	Target	Target
With Decrease	95%	95%	95%	95%	95%	95%
Without Decrease	95%	95%	95%	95%	95%	95%
Description: Provide the necessary polar observations for global environmental monitoring.						

Outyear Funding Estimates (BA in thousands)

POES	FY 2011 & Prior	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	CTC	Total
Change from FY 2012 Base		(\$8,319)						
Total Request	\$2,411,664	\$34,816	TBD	TBD	TBD	TBD	TBD	TBD

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Polar Orbiting Systems
Subactivity: Systems Acquisition

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	-8,319
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	-8,319

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APPROPRIATION: PROCUREMENT, ACQUISITION, AND CONSTRUCTION
SUBACTIVITY: CONSTRUCTION

SATELLITE COMMAND AND DATA ACQUISITION (CDA) FACILITY: The Satellite CDA Facilities Program ensures a robust facility and related infrastructure is available for supporting the continuous collection, processing and distribution of environmental data for the issuance of life saving NWS watches and short-term warnings to the public. NOAA's CDAS Infrastructure program at Wallops, VA, and Fairbanks, AK, enables the continuation of the current 99.9 percent data availability for NOAA environmental satellite systems. The Wallops and Fairbanks facilities continue to undergo significant infrastructure and building upgrades to replace aging infrastructure installed over 40 years ago. The program plans to update major systems operating well past their design lives based on a Facilities Master Planning Process that began for the Operating Stations in 1998. Both facilities continue to require maintenance, repair, and replacement, to aging systems.

The Fairbanks Satellite Operations Building replacement was completed in September of 2010 with ARRA funding, replacing a building crippled by severe weather conditions, poor foundations, and shifting soil conditions. Existing buildings and aging infrastructure continue to require resources to continue reliable operations. The Wallops facility, on the Atlantic coast, is subject to a corrosive salt air environment and lies in the path of hurricanes that hit the U.S. East Coast. The Wallops facility is undergoing major electrical infrastructure upgrades to support the reliability necessary to insure 99.9 percent of data is captured. Associated infrastructure is planned for maintenance, repair, and rehabilitation to support the various missions integral to both locations. Both stations have been determined to be critical national infrastructure elements by Presidential Decision Directive.

Funding for this budget line item is for repair and replacement of critical infrastructure components necessary to maintain the operational integrity of facilities. NOAA has developed facilities master plans for Wallops and Fairbanks facilities. In FY 2012, NOAA will continue to implement the facilities master plan for Wallops to support a phased, multi-year program to comprehensively renovate and modernize the facility, infrastructure, and equipment so as to minimize or eliminate safety hazards and hazardous materials, modernize waste water treatment, and other deficiencies that could lead to outages and service disruptions.

Schedule & Milestones:

- FY12: Complete Electrical Distribution System upgrades at Wallops CDAS
- FY13: Start Design for Electrical Distribution System upgrades at Fairbanks CDAS
Execute Phase 4 of Road Repair Project at Fairbanks CDAS
- FY14: Complete Design and begin Electrical Distribution System upgrades at Fairbanks CDAS
- FY15: Start Design for Operations Building infrastructure upgrades at Wallops CDAS
Complete Electrical Distribution System upgrades at Fairbanks CDAS
- FY16: Complete Design and begin Operations Building infrastructure upgrades at Wallops CDAS

Deliverables/Outputs:

- The Satellite CDA Infrastructure Program will complete the Electrical Distribution System upgrades at the Wallops CDAS, providing a modernized, robust and reliable Electrical Distribution System with increased capacity to meet current and future mission requirements.

Outyear Funding Estimates (BA in thousands)

Satellite CDA	FY 2011 & Prior	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	CTC	Total
Change from FY 2012 Base		-	-	-	-	-		
Total Request	\$15,552	\$2,228	TBD	TBD	TBD	TBD	TBD	TBD

PROGRAM CHANGES FOR FY 2012:

No program changes for this sub-activity.

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NOAA PROGRAM SUPPORT

For FY 2012, NOAA requests an increase of \$6,228,000 and 18 FTE over the FY 2010 enacted level for a total of \$295,530,000 and 1,041 FTE for the NOAA Program Support. This increase includes \$8,483,000 and 2 FTE in inflationary adjustments.

Base Justification for FY 2012:

The Program Support Operations, Facilities, and Research base (\$301,217,000 and 1,027 FTE) includes the following sub activities:

- Corporate Services (\$216,272,000 and 960 FTE) includes the Under Secretary and Associate Offices, NOAA Wide Corporate Services, and the Office of the Chief Information Officer.
- NOAA Education Program subactivity (\$38,710,000 and 21 FTE) includes NOAA's Educational Partnership Program and the Environmental Literacy Grants and Programs.
- The Facilities subactivity (\$31,005,000 and 46 FTE) includes NOAA's ongoing facilities management and maintenance activities.

The Program Support Procurement, Acquisition, and Construction base (\$0 and 0 FTE) includes the following subactivity:

- Construction (\$0 and 0 FTE) includes NOAA's Pacific Regional Center investments

Program Support activities support the people and the programs of NOAA, ensuring they have the proper work environment, the necessary tools and equipment, and the vital personnel and finance services which allow them to provide the finest possible services to the American people, our economy and our environment.

Within Corporate Services there are three line items: 1) NOAA's Under Secretary and Associate Offices; 2) NOAA Wide Corporate Services and Agency Management; and 3) Office of the Chief Information Officer. The Under Secretary and Associate Offices budget line item funds centralized executive-management as well as policy formulation and direction. In addition, there are various staff offices, including the offices of the Principal Deputy Under Secretary for Oceans and Atmosphere and the Deputy Under Secretary for Operations; Legislative Affairs and Intergovernmental Affairs; Communications and External Affairs; International Affairs; the Federal Coordinator for Meteorology; and the General Counsel. The NOAA Wide Corporate Services and Agency Management line item funds such activities as financial reporting, budgeting, information technology, acquisitions and grants, and human resource services.

The second sub-activity in Program Support is the NOAA Education Program, which provides expert support on education activities to NOAA Line, Program, and Staff Offices, while promoting NOAA services and products, and their benefits to the public. The Office of Education (OEd) consults within NOAA and with the Department of Commerce, and identifies opportunities for the deployment of coordinated interagency/intergovernmental policy strategies that recognize the importance of linking education, economic and environmental goals.

The third sub-activity in Program Support is Facilities, which provides funds to address facilities management; repair, restoration and other construction; and environmental compliance and safety issues NOAA-wide. NOAA is continuing efforts to comply with Executive Order 13327 (Federal Real Property Asset Management) and to effectively manage its facilities portfolio through investments in strategic long-range facility planning and modernization; annual facility condition assessments; and repair and restoration projects to address facility maintenance, repair, safety, and compliance issues. Our goal is conduct required maintenance and periodic life-cycle replacement of major building systems and components in order to maintain NOAA's owned facilities at a safe and effective operational state. Funds for new construction and selected major facility projects are requested separately in the Procurement, Acquisition and Construction account.

Proposed Reorganization to establish a Climate Service line office and Other Purposes:

The proposed reorganization will create the Office of Strategic Planning and Evaluation, combining the Office of Program Planning and Integration and the Office of Program Evaluation and Analysis. The merger is required to effectively execute NOAA's transition from the Planning, Programming, Budgeting, and Execution System (PPBES) to the Strategy, Execution, and Evaluation system (SEE). The SEE process is a continuing effort by NOAA to align the strategic priorities to the budget and to provide meaningful evaluation of the budget execution. With the implementation of NOAA's Next Generation Strategic Plan in FY 2011, NOAA is presented with a unique opportunity to reassess the budget formulation process and take steps to implement processes that provide organizational efficiencies. The Office will also be responsible for coordinating activities implementing the National Environmental Policy Act, oversight and management of NOAA's Regional Collaboration network, and for spearheading NOAA's economic and social science efforts. By consolidating offices and moving the employees of PA&E into PPI, the strategic analysis and the execution evaluation functions of the two offices may be dealt with more efficiently, consistently and promptly under one supervisor.

Significant Adjustments to Base:

NOAA requests a net increase of 2 FTE and \$8,447,000 to fund adjustments to current programs for Program Support activities. The increase will provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Service Administration (GSA).

Program Support also requests the following transfers for a net change of \$0 and -13 FTE:

From Office	Line	To Office	Line	Amount (\$K)/FTE
NESS	Archive, Access, & Assessment	PS	NOAA Wide Corporate Services & Agency Management Base	\$2,622/11 FTE
Total				\$2,622/11 FTE

NOAA requests a technical adjustment to move \$2,622,000 from NESS to Program Support. These funds will consolidate management of NOAA's library services.

From Office	Line	To Office	Line	Amount (\$K)/FTE
NESS	GOES - N	PS	NOAA Wide Corporate Services & Agency Management Base	\$810/4 FTE
Total				\$810/4 FTE

NOAA requests a technical adjustment to move 4 FTE and \$810,000 from NESS to Program Support. These funds will be used to support the Radio Frequency Management Division.

From Office	Line	To Office	Line	Amount (\$K)/FTE
PS	Under Secretary and Associate Offices	PS	NOAA Education Program	\$0/11 FTE
PS	Under Secretary and Associate Offices	PS	NOAA Facilities Management & Construction, and Safety	\$0/41 FTE
PS	NOAA Wide Corporate Services & Agency Management Base	PS	DOC Accounting System	\$0/39 FTE
PS	Under Secretary and Associate Offices			\$0/-13 FTE
Total				\$0/78 FTE

NOAA requests a technical adjustment to move \$0 and 78 FTE out of the Under Secretary and Associate Offices and the NOAA Wide Corporate Services & Agency Management Base lines to the NOAA Education Program, NOAA Facilities Management & Construction, and Safety, and the DOC Accounting System lines. These changes will allow the number of FTE used for planning to better reflect the number of FTE executed in each of these lines.

NOAA also requests a reduction of 13 unfunded FTE from the Under Secretary and Associate Offices line. This will better align the number of FTE in that line with what is actually executed.

Other Adjustments:

The NOAA FY 2012 Budget for NMFS also requests other adjustments in the amount of \$3,055,000 to restore funds related the Promote and Develop (P&D) account as provided in the FY 2011 annualized Continuing Resolution. The P&D transfer represents funds derived from duties on imported fisheries products and are transferred to NOAA from the Department of

Agriculture. The annualized FY 2011 Continuing Resolution provided \$36,056,800, including carryover, less than requested in the budget due to a downturn in the international fisheries markets. To address a difference between estimated and actual transfer amounts, NOAA has spread the reduction to each of its seven line offices, taking a 1.06 percent reduction to each PPA. With this adjustment, NOAA seeks to restore ORF amounts for NMFS back to the requested amount.

From Office	Line	To Office	Line	Amount
PS	All	PS	All	\$3,055,000

Administrative Savings:

The Administration is pursuing an aggressive government-wide effort to curb non-essential administrative spending called the Administrative Efficiency Initiative. In order to be good stewards of taxpayer money the Federal Government should continue to seek ways to improve the efficiency of programs without reducing their effectiveness. As such, the President directed each agency to analyze its administrative costs and identify savings where possible. In Program Support, NOAA has targeted a number of areas to achieve these savings. After reviewing its administrative costs, NOAA has identified \$5,598,000 in administrative savings in Program Support. Using NOAALink, NOAA anticipates saving money through more strategic sourcing of products and services. Consolidation of products will enable buying in bulk to reduce prices. Consolidation of services will result in dollar savings by reducing the number of contracts to be managed. NOAA will take a reduction in the Under Secretary and Associated Offices line, primarily by finding efficiencies in purchasing goods and services in areas such as printing, travel, and supplies. NOAA has identified alternative means to implement Homeland Security Presidential Directive (HSPD) – 12 within current resources. In the area of human capital, NOAA expects to reduce its costs by canceling or delaying some planned hires, and working to reduce its workers compensation costs. Administrative savings in the area of logistics plans and in general administrative support have been identified by limiting the use of overnight mail services as well as consolidating services through a single provider. NOAA has also identified savings tied to IT related items, primarily changing the refresh cycles of computer equipment and eliminating redundant software licenses. NOAA also anticipates saving in the DoC Working Capital Funds that will be passed through to the agency. In addition, NOAA expects to reduce costs through business process reengineering. The \$5,598,000 in administrative savings identified above represent real reductions to Program Support’s funding level and will help reduce overall spending by the Federal government.

APPROPRIATION: OPERATIONS, RESEARCH, AND FACILITIES

SUBACTIVITY: NOAA WIDE CORPORATE SERVICES & AGENCY MANAGEMENT

The objectives of the Corporate Services subactivity are to:

- Develop policies regarding the administration of NOAA programs with Federal agencies, the Congress, and private industry
- Provide oversight of the implementation of information technology policies
- Develop and implement policy, planning and program oversight
- Provide management of NOAA's Homeland Security Activities

To achieve these objectives, NOAA conducts activities in several program areas within the Under Secretary and Associate Offices and NOAA Wide Corporate Services and Agency Management. These activities are composed of three primary programs:

1. NOAA's Under Secretary and Associate Offices (USAO)

The NOAA's Under Secretary and Associate Offices (USAO) provides the top leadership and management of NOAA, and represents NOAA's executive level liaison with other Federal agencies, Congress, NOAA stakeholders and private industry.

The offices of the Under Secretary/Assistant Secretary and Deputy Under Secretary:

These offices provide the highest level NOAA leadership. Program activities consist of formulating and executing policies for achieving NOAA objectives, responding to executive branch policy decisions, and exercising delegated authority in committing NOAA to courses of action. USAO also consists of the additional Staff Offices that provide specific areas of activities:

Office of Legislative Affairs and Intergovernmental Affairs (OLAIA): This office is responsible for devising and implementing the legislative strategy to carry out NOAA's initiatives requiring Congressional action. OLAIA articulates the views of NOAA, including its components, on Congressional legislative initiatives. OLAIA responds to requests and inquiries from Congressional committees, individual congressional members, and their staff. It coordinates Congressional oversight activities involving NOAA, as well as the appearances of NOAA's witnesses and the interagency clearance of all Congressional testimony. OLAIA serves as the primary liaison for NOAA with the members and staff of Congress. The office is also responsible for the planning, direction, and coordination of legislative programs that are of immediate concern to the Office of the Under Secretary.

Office of Communications and External Affairs: This office is the principal point of contact for NOAA programs with the public and the news media. Its staff advises NOAA and other Departmental officials on all aspects of media relations and communication issues. The Office ensures that information provided to the news media by NOAA is current, complete, and accurate. It also ensures that all applicable laws, regulations and policies involving the release of information to the public are followed so that maximum disclosure is made without jeopardizing investigations and prosecutions, violating rights of individuals, or compromising national security. Activities address a variety of unique audiences: media relations; non-government organizations; state, tribal, territorial, regional and local government; and the general public.

Office of International Affairs (OIA): This office coordinates NOAA and other leadership officials' relationship with international programs, as directed by the Office of the Under Secretary. The Director of the Office of International Affairs exercises a leadership role in establishing policies, guidelines, and procedures for NOAA's international programs. Within DOC, NOAA OIA works closely with the International Trade Administration on a broad spectrum of issues including seafood exports, export control issues, and information exchange on countries and regions. Outside of DOC, NOAA OIA works closely with the State Department, the US Agency for International Development, and others to represent US interests abroad in NOAA mission areas.

Office of the Federal Coordinator for Meteorology (OFCM): This office establishes procedures for systematic and continuing review of national basic specialized meteorological and oceanographic requirements for services and supporting research; it also brings Federal agencies concerned with international activities and programs in meteorological as well as oceanographic programs into close consultation and coordination.

Office of General Counsel (OGC): NOAA'S Office of General Counsel provides legal advice, review, and representation on a host of complex matters arising from the fulfillment of NOAA's mission to understand and predict changes in Earth's environment and conserve and manage coastal and marine resources to meet our Nation's economic, social, and environmental needs.

NOAA's GC ensures management decisions are made with necessary consideration of proper legal requirements, procedures and options. OGC's activities conducted with program resources include Magnuson-Stevens Reauthorization Act (MSRA) implementation; Coastal Zone Management Act (CZMA) consistency appeals; enforcement of fisheries and species conservation regulations; natural resource damage assessment and recovery; support of legislative proposals, including Aquaculture, Coral Reef Conservation, and Coastal Zone Management legislation; and support of Law of the Sea Convention implementation obligations.

Conservation and sustainable management of coastal and marine resources work is complex, heavily regulated, and often litigated. The laws governing these programs include the U.S. Constitution, Executive Orders, numerous federal and state statutes, regulations, case law, and international law (e.g., treaties, agreements, and binding resolutions), some of which are overlapping and conflicting. Litigation is filed against NOAA approximately 30 times per year regarding its regulatory activity and consultations and there are about 100 pending cases at any one time. In addition, NOAA promulgates hundreds of regulations annually to advance its mission, which requires close coordination between attorneys and program personnel, as well as other agencies and stakeholders. Every year, NOAA consults with other federal agencies about hundreds of proposed federal actions with respect to legal requirements to conserve living marine species. It also brings hundreds of enforcement actions annually against violators of the nation's natural resource laws administered by NOAA. The programs necessarily work arm-in-arm on a daily basis with NOAA GC attorneys, and rely heavily on the attorneys' expertise in this complex area for legal review, drafting, guidance, negotiations in international foray, and representation in court and with other agencies.

2. NOAA Wide Corporate Services and Agency Management

Acquisition and Grants Office (AGO): AGO supports NOAA line and staff offices, and a number of other DOC bureaus, providing the planning, solicitation, award, administration and close-out of acquisitions and other financial assistance funding mechanisms. Through these functions, AGO helps NOAA execute its day-to-day responsibilities and assists the agency in providing critical services to the Nation. The success of DOC and NOAA in their accomplishment of missions and goals is largely dependent on the ability of the NOAA AGO to successfully obligate these funds in accordance with statutory and regulatory requirements. Grants are awarded and administered through using Grants Online. NOAA has implemented improved oversight of its delegated procurement authority and purchase card programs through adherence to acquisition regulation and policy, timely reconciliation and approval of purchase card statements, and compliance with mandatory training requirements by those with delegated acquisition authority.

The number of acquisitions awarded by the NOAA Acquisition workforce has increased by almost 300 percent in just 5 years. AGO provides annual acquisition and grants support to DOC and NOAA valued at over \$2 billion. As the NOAA acquisition workload has increased, the complexity of the acquisitions conducted and the level of contract administration oversight required have similarly increased. Major system acquisitions for equipment and services involving state-of-the-art technology are now common throughout NOAA programs, in particular: JPSS, GOES-R and POES. High Performance Computing Capability (HPCC); Advanced Interactive Weather Processing System (AWIPS); Fisheries Survey Vessels (FSVs); NOAA Aircraft; Facilities Construction; and a wide variety of Research and Development initiatives.

AGOs base funds show benefits by:

- Providing a qualified workforce and improving the quality of work. Reducing reliance on contractors to perform acquisition tasks and thereby reducing contractor expenses.
- Reducing the time required to award contracts and grants
- Reducing the time managers spend performing work typically assigned to their employees, leaving more time to manage, provide oversight and ensure risk reduction.
- Increasing awards of new actions (i.e., obligating funds) and reducing cost by spending less time on administering existing actions.

Office of Chief Administrative Officer (OCAO): OCAO is responsible for NOAA's facility management program, including capital investment planning and management for NOAA's substantial facility portfolio totaling over \$5 billion in owned and leased facilities; facility construction and modernization; and real and personal property management. The OCAO manages NOAA's safety, environmental compliance, and energy efficiency ("greening") programs; NOAA's technology and deemed export control program to ensure continued NOAA-wide compliance with Export Administration Regulations; and oversees NOAA's Office of Inspector General and Government Accountability Office audit coordination and resolution program. The OCAO also manages NOAA's Freedom of Information Act (FOIA) compliance, competitive sourcing program, administrative issuances program, civil rights program, and compliance with Homeland Security Presidential Directive (HSPD) – 12 requirements.

Office of the Chief Financial Officer (CFO):

The Chief Financial Officer (CFO) serves as the principal financial manager for an organization whose appropriated resources approach nearly \$5 billion and whose recorded capital asset value exceeds \$7 billion. The CFO's Office also has the responsibility under the CFO Act to provide the leadership necessary for NOAA to obtain a yearly-unqualified opinion in the audit of its consolidated financial statements. The areas under the direction of the CFO are the Budget Office, the Finance Office, the DOC Working Capital Fund (WCF), and Common Services.

The Budget Office is responsible for the oversight and management of NOAA's budget process. It develops overall guidance, reviews proposals, and prepares supporting justification and documentation. This includes coordinating the preparation of NOAA budget submissions to the Department, OMB and the Congress, including data on budget authority, obligations, outlays, permanent positions, and full-time equivalent employment. The Budget Office also provides for the proper allocation and control of the execution of all budgetary resources as required under the Congressional Budget and Impoundment Act of 1974 (31 U.S.C. 11) and related statutes, and as specified by the Office of Management and Budget (OMB). The Office also maintains a staff that focuses on outreach and communication, particularly with the staff of Congressional Appropriations committees, as well as other Executive Branch agencies.

The Finance Office works to ensure that NOAA's consolidated financial statements and reports accurately reflect NOAA's fiduciary status at the end of the fiscal year, as required of all government agencies under the CFO Act of 1990. It operates NOAA's financial management system (the Commerce Business System (CBS)) to ensure that NOAA managers have access to timely financial data necessary to make informed programmatic decisions. The Finance Office is also responsible for ensuring that NOAA's bills are paid in a timely manner.

- The Finance Office provides accounting and payments services. The objective is to provide financial management service and support to NOAA programs. The Finance Office plans, designs, and coordinates standards, practices, and procedures on financial operations for NOAA programs.
- The Finance Office prepares internal and external accounting and financial reports on NOAA appropriations, including the audited financial statements required by the CFO Act. The objective is to maintain the Department's clean financial opinion without any material weaknesses and to correct any findings.
- Finance also manages NOAA's financial management system. The objective is to plan, develop, and implement changes to CBS throughout NOAA to ensure that NOAA programs have the needed financial information for their programs.

The DOC Accounting System (CBS application) supports the NOAA CFO in ensuring compliance with legal/regulatory/executive requirements, and enables NOAA program managers to execute the budget while enforcing funds control. The CBS application requires that the application, along with associated interfaces and feeder systems, be operated, maintained and enhanced. Based on the maintenance and enhancements that are designed, developed and implemented, these need to be tested to ensure that integrity, availability, and confidentiality are maintained within the context of a secure application environment. The CBS user community requires ongoing helpdesk services and, depending

on the maintenance and enhancement releases, training to support the 10,000 plus users across the agency. Ongoing maintenance and support of CBS allows NOAA to maintain compliance with OMB Circular A-123 and the Federal Information Security Management Act (FISMA).

The NOAA implementation of the CBS application develops interfaces, maintains the NOAA Data Warehouse and portal (including associated feeder systems), and conducts quality assurance tests to ensure that the CBS application and all associated feeder systems produce reliable, accurate, and verifiable data. This helps to ensure NOAA compliance with legal/regulatory/executive requirements; and allows NOAA managers to have access to timely financial data necessary to make informed programmatic decisions and perform funds management.

The Common Services (CS) account supports the NOAA Chief Financial Officer in providing resources for NOAA-wide activities and services provided through the Department of Commerce (DOC) and other agencies through Memoranda of Understanding (MOUs) and/or Interagency Agreements. CS funds the entire NOAA Workman's Compensation costs; DOC's Departmental Management Advances and Reimbursements (A&R) accounts consisting of special services and tasks; NOAA-wide Spectrum Management costs; off-site health services at the Census Bureau Health Unit; OPM USAJobs portal usage and maintenance; and other miscellaneous services and products.

Workforce Management Office (WFMO): The Workforce Management Office provides policies, programs, and processes that facilitate the recruitment, hiring, development, and retention of a diverse, highly skilled, motivated, and effective workforce capable of accomplishing the Agency's mission. This office provides NOAA-wide leadership to workforce management functions including strategic human capital planning, labor-management and employee relations, performance management and incentive awards, executive resources, distance learning, leadership development, training and career development, as well as human resources data management and automation initiatives.

Strategic Planning and Evaluation (SPE): The Office of Strategic Planning and Evaluation, proposed as part of the Climate reorganization proposal presented in this budget, is the combination of the Office of Program Planning and Integration and the Office of Program Evaluation and Analysis. The merger of these two offices will allow NOAA to effectively execute NOAA's transition from the Planning, Programming, Budgeting, and Execution System (PPBES) to the Strategy, Execution, and Evaluation system (SEE). The SEE process is a continuing effort by NOAA to align the strategic priorities to the budget and to provide meaningful evaluation of the budget execution. With the implementation of NOAA's Next Generation Strategic Plan in FY 2011, NOAA is using this opportunity to reassess the budget formulation process and to take steps to implement processes that provide organizational efficiencies. This combined office provides corporate management to coordinate NOAA's many lines of service with the Nation's numerous needs for environmental information and stewardship. It ensures that agency investments and actions are guided by a strategic plan, are based on sound social and economic analysis, adhere to executive as well as legislative branch science, technology and environmental policy, and integrate the full breadth of NOAA's resources, knowledge and talent to meet its stated mission goal.

SPE also coordinates NOAA's internal and external collaborative networks by promoting coordination of NOAA's diverse assets within eight regions and collaboration with internal stakeholders and external partners to respond to our stakeholders' unique regional challenges and requirements. SPE also coordinates all NOAA activities implementing the National Environmental Policy Act (NEPA) and ecology and environmental conservation matters, and serves as the focal point for Department NEPA compliance and implementation

Payment to the DOC Working Capital Fund: The Working Capital Fund (WCF) was established to provide centralized services to the Line Offices and Staff Offices in the most efficient and economical manner possible by the DOC to NOAA. Organizational units within the department provide the administrative, legal, information technology and financial support needed to accomplish NOAA's overall mission. The Working Capital Fund was established pursuant to 5 USC 607 (15 USC 1521). Unlike other DOC bureaus, the NOAA contribution to the WCF is provided by specific allocation within the NOAA appropriation.

3. Office of the Chief Information Officer

OCIO provides information technology (IT) leadership, mission assurance, and high-performance computing capabilities. The Office leads NOAA's High Performance Computing and Communications (HPCC) Program; promotes the effective use of IT to accomplish NOAA's mission; provides advice to NOAA management on information resources and information systems management; promotes and shapes an effective strategic and operational IT planning process for NOAA; directs the improvement of NOAA operations and service delivery using IT systems; coordinates the preparation of NOAA's IT budget; oversees selected NOAA-wide operational IT systems and services; strengthens the security posture of NOAA's enterprise IT investments; implements the provisions of the Clinger-Cohen Act, the E-Government Act, the Paperwork Reduction Act and other statutory requirements regarding the acquisition, management, and use of information and IT resources; and manages NOAA's Homeland Security Program to ensure business continuity in the event of a terrorist attack, major disaster, or other emergency.

OCIO is responsible for ensuring that NOAA programs make full and appropriate use of IT. OCIO develops policies and programs that support implementation of the following legislation, guidance, and policies: Clinger-Cohen Act; Federal Information Security and Management Act (FISMA), Federal Financial Management Improvement Act, Computer Security Act; Paperwork Reduction Act; Federal Managers' Financial Integrity Act; Privacy Act; Government Paperwork Elimination Act; Electronic Government (e-Gov) Act; Federal Information Quality Act (Section 515); Rehabilitation Act (Section 508 – Accessibility); OMB Circulars (A-11, -123, -127, -130); and DOC IT Policies. The line also provides for management of IT Security for NOAA systems. The NOAA IT Security Program implements policies, standards, and procedures which are consistent with government-wide laws and regulations, to assure an adequate level of protection for IT systems whether maintained in-house or commercially. NOAA IT Security Program policies represent management's commitment to assuring confidentiality, integrity, availability, and control of NOAA IT resources. OCIO focuses a high priority on IT security, technology refresh of NOAA's critical IT infrastructure, Homeland Security, and program management for NOAA's IT investment portfolio. OCIO is committed to modernizing the IT infrastructure and improving the cost effectiveness, efficiency, and service of operations to support NOAA's mission.

The CIO also operates the NOAA Central Library on behalf of all agency programs to support NOAA staff in their work and provide public access to NOAA information. It includes the central library located in Silver Spring (MD) and regional libraries in Seattle (WA), Miami (FL), and a branch library in Camp Springs (MD). The central library also organizes agency-wide information services such as electronic journal and database subscriptions and online reference services to support NOAA employees nationwide through affiliated libraries at NOAA facilities throughout the United States. The NOAA Central Library's collection currently consists of over 600,000 volumes and thousands of electronic documents and visual images on topics related to NOAA's diverse missions.

High-level execution priorities include the following:

- Ensure IT Security -- Implement policies, standards, and procedures for NOAA IT systems which are consistent with government-wide laws and regulations and information assurance standards to protect NOAA's information systems, whether maintained in-house or commercially, and prevent security breaches which would adversely impact NOAA's mission
- Modernize IT Infrastructure -- Plan for and deploy new investments in NOAA's IT infrastructure including wide and local area networks, messaging systems, collaboration tools, telephony, workstations, help desks, enterprise Commercial-off-the-Shelf (COTS) software, and administrative applications
- Establish Enterprise Architecture and Planning -- Transform Enterprise Architecture (EA) in NOAA into a practical, relevant, and value-added tool to guide CIO and corporate decisions regarding NOAA's IT future, and begin integrating the NOAA security architecture into the EA, providing a framework for consolidating IT infrastructure, integrating applications and data across programs and Line Offices, and achieving concurrence from Goal/Sub-Goal Team Leads on the Target Architecture

Schedule and Deliverables

SPE Schedule & Deliverables:

Strategic Planning and Evaluation (SPE) Schedule and Milestones are:

- Corporate Portfolio Analysis – 1ST Quarter Annual Guidance Memorandum – 4th Quarter
- Progress to Plan – 4th Quarter NEPA Analysis/Reviews – All Quarters
- Economic Statistics – All Quarters
- Performance Measure Analysis – 4th Quarter

Deliverables/Outputs:

Strategic Planning and Evaluation (SPE) Deliverables and Outputs are:

1. Corporate Portfolio Analysis - Analyzes Implementation Plans to identify key issues and corporate priorities for the next budget formulation phase; draws attention to long term concerns for Leadership; concludes with NEP/NEC Decision Memo
2. Annual Guidance Memorandum - provides NOAA wide annual guidance focusing analytical attention based on the Strategic Plan, Administration priorities, recent

execution/evaluation, fiscal and policy environment. It also identifies NOAA's near term priorities, initial fiscal guidance for planning cycles.

3. Progress to Plan - Assesses progress toward NGSP objectives; evaluates executed programs to determine what has been working and what might be changed for better performance
4. NEPA Analysis and Reviews - NOAA is charged by the White House Council on Environmental Quality (CEQ) regulations with implementing NEPA policy from a corporate (NOAA-wide) perspective. NOAA actions requiring NEPA review include: Fisheries management and regulations, Endangered Species Act/Marine Mammal Protection Act permits/authorizations, Habitat restoration plans, National Marine Sanctuaries and National Estuarine Research Reserves site designation and management, NOAA-wide administered grant programs, and construction activities such as science laboratories, ground stations for, satellites and NWS Weather Forecast Offices.
5. Economic Statistics - Ensures that information regarding the social science benefits of NOAA's programs is collected and clearly conveyed via appropriate media such as Web sites and printed materials.
6. Performance Measure Analysis – The Government Performance and Results Act (GPRA), enacted by Congress in 1993, instituted formal requirements for strategic planning and performance measurement in the Federal government. GPRA requires that agencies develop strategic plans, annual performance plans, and annual program performance reports.

CFO Schedule and Deliverables

Deliverables/ Outputs	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Provide Enacted Fund Availability Table	Q1	Q1	Q1	Q1	Q1	Q1
Provide funding allocations to NOAA Line Offices	15 days after enactment	15 days after enactment	15 days after enactment	15 days after enactment	15 days after enactment	15 days after enactment
Complete apportionment submission to DOC	10 days after enactment	10 days after enactment	10 days after enactment	10 days after enactment	10 days after enactment	10 days after enactment
Identify corrective action plans for Audit Findings	Q1-30 days after receipt of Final Findings	Q1-30 days after receipt of Final Findings	Q1-30 days after receipt of Final Findings	Q1-30 days after receipt of Final Findings	Q1-30 days after receipt of Final Findings	Q1-30 days after receipt of Final Findings
Review of Execution spend plan for Staff Offices	monthly	monthly	monthly	monthly	monthly	monthly

Complete Direct Bill analysis and distribution of Direct Bill Funds	Q2	Q2	Q2	Q2	Q2	Q2
Complete Blue Book for President's Budget Request	Q2	Q2	Q2	Q2	Q2	Q2
Document and track all Congressional Appropriation Reports	monthly	monthly	monthly	monthly	monthly	monthly
Complete Congressional Budget Submission	Q2	Q2	Q2	Q2	Q2	Q2
Complete Secretarial Budget Submission	Q3	Q3	Q3	Q3	Q3	Q3
Complete NOAA Control Table for Passbacks and MarkUps	5 days after receipt of change	5 days after receipt of change	5 days after receipt of change	5 days after receipt of change	5 days after receipt of change	5 days after receipt of change

OCIO Schedule and Deliverables

Activity	Description of Milestone	Planned Completion Date
IT Administration and Regulation	PLANNING: Prepare NOAA Operational IT Plan	Q1 annually
	PLANNING: Prepare NOAA Strategic IT Plan	Q2 annually
	QUALITY OF SERVICE: Conduct NOAA customer satisfaction survey to assess performance	Q3 annually
IT Security	CERTIFICATION & ACCREDITATION (C&A): Complete Continuous Monitoring (CM) activities (i.e., annual penetration testing for high impact systems, quarterly vulnerability scanning for all systems, annual assessment of select controls for all systems not undergoing C&A testing) in accordance with CIO Council-approved CM schedule	Quarterly
	C&A: Complete C&A packages in accordance with the CIO Council-approved C&A schedule	Quarterly

	DEFENSE-IN-DEPTH IT SECURITY STRATEGY (User Awareness): Administer annual NOAA IT security awareness training	Q2 annually
	DEFENSE-IN-DEPTH IT SECURITY STRATEGY (Compliance Monitoring): Complete annual FISMA Report	Q4 annually
IT Program Management	Implement enterprise-wide IT governance	Quarterly
	Provide IT infrastructure services across the enterprise	Quarterly
	Promote cost-effective Green IT	Quarterly
Enterprise Architecture	Leverage service-based IT across multiple goals and business needs	Quarterly
	Facilitate implementation of an enterprise-wide data management architecture	Quarterly
	Facilitate engineering of mission services upon an enterprise infrastructure services architecture	Quarterly
IT Support for Administrative Systems	Communicate efficiently and securely through a modernized infrastructure	Quarterly
	Deliver customer-focused IT services for the enterprise	Quarterly
Homeland Security	Plan & conduct annual NOAA HQ Continuity of Operations (COOP) exercise	Q3 annually
	Update/revise NOAA Pandemic Plan	Q3 annually
	Update NOAA COOP Plan	Q4 annually

Performance Goals and Measurement Data

Acquisition and Grants Office

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Timeliness of acquisition actions	75%	75%	75%	75%	75%	75%

Description: This measure tracks the percentage of on time acquisition actions as measured against NOAA's published Procurement Action Lead Time (PALT) schedule. Timeliness is measured against the published procurement action lead time metrics (for each acquisition package) and is measured from the receipt of a requisition to the date of award. The dates are tracked in the CRequest/CStar procurement system. Percentages represent meeting the published PALT for that transaction.

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Timeliness of grants actions	70%	70%	70%	70%	70%	70%

Description: This measure tracks the percentage of on time grants actions as measured against NOAA's published Procurement Action Lead Time (PALT) schedule. Timeliness is measured against the published procurement action lead time metrics (for each acquisition package) and is measured from the receipt of a requisition to the date of award. The dates

are tracked in the CRequest/CStar procurement system. Percentages represent meeting the published PALT for that transaction.

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Reduction of errors	73%	73%	73%	73%	73%	73%
Description: This measure tracks the number of error-free contract and grant actions. Performance will be tracked via system error reports, peer reviews, and evaluation by the AGO Policy and Oversight Division.						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Customer Satisfaction with Service	70%	70%	70%	70%	70%	70%
Description: This measure tracks the satisfaction level of AGO customers. Performance will be tracked through semi-annual customer surveys, individual action customer surveys, and outreach by the Director of AGO.						

Office of General Counsel

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Availability of legal support to programs	95 %	95 %	95 %	95 %	95 %	95 %
Description: This measure serves as an indicator of the availability of legal resources to support program requirements.						

Chief Financial Officer

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Percent of related NOAA Deadlines met for submissions to DOC, OMB, and Congress	100%	100%	100%	100%	100%	100%
Description: This performance measure shows the targets for the Budget office meeting DOC, OMB and Congressional Budget deadlines						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Coordinate and prepare Fiscal Year President's Budget Request Rollout	100%	100%	100%	100%	100%	100%
Description: This performance measure relates to the Target levels of the Budget Office's efforts towards coordinating, reviewing and preparing the Fiscal Year President's Budget						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Complete End of Year Execution Reviews for NOAA Line Offices	100%	100%	100%	100%	100%	100%
Description: This performance measure relates to the Target levels for the Budget Office to complete the End of Year Execution Reviews for all NOAA Line Offices						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Expend CFO Office Funding by Year End	99.8%	99.8%	99.8%	99.8%	99.8%	99.8%
Description: This performance measure relates to the Target levels for the Budget Office to expend all appropriated funding by the end of Fiscal year						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Prompt Payment of Vendor Invoices w/o penalty	98%	98%	98%	98%	98%	98%
Description: This performance measure relates to the Target levels for the Finance Office to pay all the vendor invoices promptly and without any penalties						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Financial Statements and Regulatory reports due date	100%	100%	100%	100%	100%	100%
Description: This performance measure relates to the Target levels for the Finance Office to submit all the Financial Statements and Regulatory Reports by the due date						

Office of the Chief Information Officer

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Full Authorization to Operate for all NOAA IT Systems (Complete C&A)	99%	98%	97%	96%	95%	94%
Description: The Certification and Accreditation (C&A) process requires a fully-tested system with a complete set of security documentation (e.g., approved security plan, risk assessment, disaster recovery plans, security testing), prior to being deemed certified. All systems in NOAA (approximately 120-150 at any given point in time) have been inventoried for their relative ranking as National Critical, Mission Critical, or Business Essential. This IT measure reports the percentage of NOAA IT Systems that have completed the C&A process and operate under a Full Authorization to Operate (ATO). Systems with full Authorization to Operate have completed Certification & Accreditation (C&A) prescribed by FISMA – security controls are in place for those systems and their FISMA documentation has been verified.						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Number of outstanding plans of action and milestones (POA&Ms) greater than 120 days past due	250	300	350	400	450	500
Description: The C&A process requires a fully-tested system with a complete set of security documentation (e.g., approved security plan, risk assessment, disaster recovery plans, security testing), prior to being deemed certified. All systems in NOAA (approximately 120-150 at any given time) have been inventoried for their relative ranking as National Critical, Mission Critical, or Business Essential. Plans of action and milestones (POA&Ms) are assigned, and those that are outstanding beyond 120 days past their planned completion date are reported in this IT measure.						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Web Operations Center (WOC) Availability	99%	99%	99%	99%	99%	99%
Description: This IT measure reports the availability of the Web Operations Center (WOC), which is operated and maintained by OCIO, expressed as the percentage of uptime in a given year. Network engineers monitor the system and measure the percentage of time that it is available. Availability is inversely proportional to the total downtime in a given year, and the total downtime is simply the sum of the duration of each outage. Decreasing the duration and/or frequency of outages increases availability.						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Performance Measure: Availability of NOAA Enterprise Messaging System	97%	96%	95%	94%	93%	92%
Description: This IT measure reports the availability of the NOAA Enterprise Messaging System, which is operated and maintained by OCIO, expressed as the percentage of uptime in a given year. Network engineers monitor the system and measure the percentage of time that it is available. Availability is inversely proportional to the total downtime in a given year, and the total downtime is simply the sum of the duration of each outage. Decreasing the duration and/or frequency of outages increases availability.						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Comply with Federal COOP requirements, policies and directives	80%	80%	80%	80%	80%	80%
Description: This Homeland Security measure assesses NOAA's continuity capability rating with respect to accomplishing several continuity requirements, as outlined in National Security Presidential Directive [NSPD] -51 / Homeland Security Presidential Directive [HSPD] -20 Paragraph 11.						

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Program Changes for FY 2012:

Under Secretary and Associate Offices Base: NOAA General Counsel (Base Funding: 49 FTE and \$11,770,000; Program Change: 0 FTEs and +\$1,000,000): NOAA requests an increase of 0 FTEs and \$1,000,000 for a total of 49 FTEs and \$12,770,000 to enable NOAA General Counsel (GC) to provide necessary legal support to NOAA programs.

Proposed Action

The FY 2012 request provides support to enable NOAA's Office of the General Counsel to support full implementation of the following programs:

- Limited access permit programs/catch shares under the Magnuson-Stevens Fishery Conservation and Management Act.
- Increased responsibilities to reduce illegal, unreported and unregulated fishing by foreign vessels on the high seas, including implementation and enforcement of the recently concluded FAO Port State Measures Agreement to Combat Illegal, Unreported and Unregulated Fishing.
- Implementation of Western and Central Pacific Fishery Commission and Western Pacific Marine National Monuments.
- Increased international responsibilities resulting from U.S. accession to the Law of the Sea Convention, which the U.S. is working to ratify, including delimitation of the outer boundary of the U.S. extended continental shelf.
- Consultations under the Endangered Species Act on alternative energy and other high priority projects.

Statement of Need and Economic Benefits

Recent legislation and other emerging issues have created additional requirements for legal support. The 2007 amendments to the Magnuson-Stevens Fishery Conservation and Management Act imposed new requirements for rebuilding overfished fisheries and ending overfishing. One of the Administration's priority approaches to implementing these requirements is the establishment of catch share programs in U.S. fisheries. Establishment and ongoing implementation of catch shares programs nationwide is a priority strategy to rebuilding U.S. fisheries, with potential increases of \$2.2 billion in commercial dockside value of fisheries. Establishment and implementation of these programs requires intensive legal support in structuring the programs; allocation of shares to individual fishermen; including processing of appeals of allocations, and ongoing administration of the programs. Without additional legal support, efforts to meet these new requirements will be delayed and vulnerable to legal challenge. The Magnuson-Stevens Act amendments also require new enforcement activities to reduce illegal, unreported and unregulated fishing by foreign vessels. The United Nations Food and Agricultural Organization recently approved a new agreement establishing new requirements for member states to deny port entry and services to vessels engaged in illegal fishing. The U.S. must develop and enforce implementing arrangements to ensure compliance with these requirements. Legal support is required (i) to assist in developing implementing arrangements to ensure that these arrangements meet the new international requirements and are consistent with domestic law, and (ii) to enforce these new arrangements domestically and internationally. Legal support is required to ensure timely development and enforcement of these arrangements. The Magnuson-Stevens Act amendments included legislation authorizing the U.S. to participate as a member of the Western and Central Pacific Fisheries Convention, an international fishery management organization. Legal support is required for the U.S. delegation to ensure that fishery management measures adopted by the Commission can be implemented under U.S. domestic law.

The development of alternative energy resources is an Administration priority that will increase requirements for consultations under the Endangered Species Act with NOAA by Federal agencies involved in licensing or permitting offshore alternative energy activities. Each such consultation requires legal review to ensure compliance with the Endangered Species Act. Without additional legal support, legal challenges to alternative energy projects could significantly delay implementation of such projects.

Deliverables and Performance Goals

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Availability of legal support to programs	Target	Target	Target	Target	Target	Target
With Increase	N/A	99.9%	99.9%	99.9%	99.9%	99.9%
Without Increase	95%	95%	95%	95%	95%	95%
Description: This measure serves as an indicator of availability of legal resources to support program requirements.						

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Program Support
Subactivity: Corporate Services

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	25
22 Transportation of things	1
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	957
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	5
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	12
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>1,000</u>

DOC Accounting System: Commerce Business Systems (Base Funding: 39 FTE and \$10,525,000; Program Change: 0 FTE and +\$5,000,000): NOAA requests an increase of \$5,000,000 and 0 FTE for a total of \$15,525,000 and 39 FTE to migrate the Commerce Business System (CBS) from the existing operating system to the Department of Commerce standard operating system.

Proposed Actions:

The NOAA CBS system provides a scalable and robust system for handling all aspects of the financial management process, including allocating and maintaining fund balances, recording obligations and accruals, and supporting the generation of monthly, quarterly, and year-end financial reports/statements. CBS has enabled Department of Commerce and NOAA in receiving and maintaining unqualified audit opinions for the past 10 straight years. The current CBS operating system, HP Tru64, will no longer be supported by the vendor at the end of 2012. In addition, the Department of Commerce has mandated that all Bureaus running a CBS instance migrate to a standard operating system over the next 3 years to drive efficiencies in maintaining the CBS environments across the Department as well as to provide a more scalable and viable operating system for future needs of the financial system. The FY 2012 request of \$5,000,000 will support the selection of Solaris as the Departmental standard operating system for CBS, allow for procurement of initial hardware in time to configure and migrate the CBS environments in FY 2013. Migrating to the Departmental standard will allow us to maintain compliance with OMB Circular A-123 and the Federal Information Security Management Act (FISMA).

Statement of Need and Economic Benefits:

The CBS application supports the NOAA Chief Financial Officer (CFO) in ensuring compliance with legal, regulatory, and executive requirements, and enables NOAA program managers to execute the budget while enforcing funds control. The CBS application requires that the application and associated interfaces and feeder systems be operated, maintained, and enhanced in parallel. Any new enhancements to CBS need to be tested to ensure that integrity, availability, and confidentiality are maintained within the context of a secure application environment before the improvements are made operational. The CBS user community requires ongoing helpdesk services and, depending on the maintenance and enhancement releases, training to support the more than 10,000 users across the agency. Ongoing maintenance and support of CBS allows NOAA to maintain compliance with the OMB A-123 and the FISMA.

Major drivers include: FISMA; DOC; the OMB Financial Management Line of Business (FMLoB) initiative; and the OMB A-123. If funding is not approved, the following program and/or customer impacts will occur:

1. CBS operations would be jeopardized and NOAA could not ensure compliance with legal/regulatory/executive requirements.
2. If CBS is not operational, executing NOAA's budget and maintaining an unqualified audit opinion would be impossible.

Base Resource Assessment:

Base resource assessment is provided in the Program Summary for the Corporate Services program.

Schedule and Milestones

Deliverable (CBS)	Planned Completion Date
Software maintenance and support	09/2012
Technology Refresh (hardware and Operating System)	09/2012
Conduct Spot and Regression Testing	09/2012
Provide help desk support and training services	09/2012
Software maintenance and support	09/2013
Security Certification and Accreditation (C&A)	09/2013
Conduct Spot and Regression Testing	09/2013
Provide help desk support and training services	09/2013
Software maintenance and support	09/2014
Conduct Spot and Regression Testing	09/2014
Provide help desk support and training services	09/2014
Software maintenance and support	09/2015
Conduct Spot and Regression Testing	09/2015
Provide help desk support and training services	09/2015
Software maintenance and support	09/2016
Conduct Spot and Regression Testing	09/2016
Provide help desk support and training services	09/2016

Deliverables

1. CBS systems availability 99.9 percent during planned periods of systems availability to the NOAA user community.
2. Migration to a new standard operating system across all tiers of the CBS application suite.

Performance Goals and Measurement Data

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
CBS Systems Availability	Target	Target	Target	Target	Target	Target
With Increase	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%
Without Increase	99.9%	80%	40%	0%	0%	0%

Description: System Availability is the measure of a user being able to connect to the application and perform meaningful work during scheduled uptime. CBS systems availability is predicated on vendor support of the hardware and software. Since HP will de-support the HP Alpha Servers and the TRU64 Unix operating systems any failures, issues, bugs, security vulnerabilities could result in system down time. Over time, the likelihood of a system failure on really old equipment increases dramatically.

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Maintain FISMA Compliance for Supported OS. Clean Audit Findings Related to OS						
With Increase	N/A	Compliance with FISMA – ATO Maintained	Compliance with FISMA – ATO Maintained	Compliance with FISMA – ATO Maintained	Compliance with FISMA – ATO Maintained	Compliance with FISMA – ATO Maintained
Without Increase	Compliance with FISMA – ATO Maintained	Non-Compliance with FISMA – ATO Threatened	Non-Compliance with FISMA – ATO Threatened	Non-Compliance with FISMA – ATO Threatened	Non-Compliance with FISMA – ATO Threatened	Non-Compliance with FISMA – ATO Threatened
Description: FISMA and the NOAA C&A Authority to Operate (ATO) require that the Operating System used to support the accounting system be maintained by the vendor, have security patches applied and be currently supported. Failure to utilize a vendor supported OS that is patched and maintained creates a system and security vulnerability that would result in non-compliance and loss of ATO for the application.						

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Program Support
Subactivity: Corporate Services

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	293
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	4,707
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	5,000

NOAA Wide Corporate Services & Agency Management Base: Acquisitions and Grants Management (Base Funding: 109 FTE and \$13,651,000; Program Change: 0 FTE and +\$4,345,000): NOAA requests an increase of 0 FTE and \$4,345,000 for a total of 109 FTE and \$17,996,000 to support acquisition and grants services for NOAA.

Proposed Actions

This investment will enhance NOAA's ability to provide dedicated personnel assets to increase the capacity of the acquisition and grants workforce sufficient to ensure successful obligation of the increasing volume of contractual and financial assistance actions. Additionally, requested funding will provide dedicated personnel and funding sufficient to implement an effective procurement oversight program. These resources will afford NOAA an opportunity to fully staff the Policy and Oversight Division (POD) within the Acquisition and Grants Office (AGO). The POD will implement recommendations made by the Government Accountability Office (GAO) in their June 2006 report to Congress (GAO-06-594, NOAA Acquisition Function). One of the recommendations of the report was for DOC/NOAA to regularly monitor the acquisition of goods and services acquired by collateral duty contracting officers in field offices. To obtain the recommended oversight, NOAA AGO will hire contract support to conduct regular reviews of procurement actions conducted by collateral duty contracting officers and Government Purchase Cardholders, who similarly exercise delegated procurement authority. Oversight of the field delegates will involve on-site reviews of 80% of awards made by the audited delegate for the preceding 12 months. This action will specifically address the required action under the GAO Corrective Action Plan and will address one of the primary concerns government-wide regarding management of purchase card use. Effective oversight is essential to ensure adherence to Federal Acquisition Regulation (FAR), Departmental and NOAA policy and to protect NOAA from instances of fraud, waste and abuse.

Statement of Need and Economic Benefits

NOAA's AGO provides annual acquisition and grants support to DOC and NOAA valued at approximately \$2 billion (\$1 billion in grants awards and \$1 billion in contract awards). The success of DOC and NOAA in accomplishment of missions and goals is largely dependent on the ability of the NOAA AGO to successfully obligate these funds in accordance with statutory and regulatory requirements. This request responds to GAO recommendations contained in its June 2006 Report on the NOAA Acquisition Function (GAO-06-594). Requested funding is critical to ensuring the operational success of DOC and NOAA.

Increased Complexity of Work

The number of acquisitions awarded by the NOAA Acquisition workforce has increased by almost 300% in just 5 years. AGO currently performs approximately 16,000 acquisition actions and nearly 2,000 grants annually. As the NOAA acquisition workload has increased, the complexity of the acquisitions conducted and the level of contract administration oversight required have similarly increased. Major system acquisitions for equipment and services involving state-of-the-art technology are now common throughout NOAA. AGO is currently providing acquisition support for multi-billion dollar satellite programs (including Joint Polar Satellite System, GOES-R and POES). Increased complexity is also evident in the acquisition support provided to numerous multi-million dollar programs such as: NOAA's High Performance Computing Capability, Advanced Interactive Weather Processing System (AWIPS), Fisheries Survey Vessels (FSVs), NOAA Aircraft, Facilities Construction and a wide variety of research and development initiatives.

Increased Need for Contract/Grant Surveillance

As contractual and financial assistance obligations have increased, so has NOAA's reliance on the private sector. The area demonstrating the greatest degree of reliance upon the commercial sector is the acquisition of services. Government-wide, service contracts continue to grow disproportionately to contracts for equipment and supplies. Service contracts require additional surveillance effort by the acquisition workforce to ensure proper oversight. In its report on DOD Acquisitions (GAO-06-800T) GAO stated that "*Government monitoring and inspection of contractor activity, if not done well, can contribute to a lack of accountability and poor acquisition outcomes*". Given NOAA's increasing reliance on the private sector to provide the services essential for mission success, additional resources are required to monitor the performance of these contracts. Failure to provide an acquisition and grants workforce, sufficiently robust to maintain adequate oversight, places DOC/NOAA at increased risk of cost overruns, substandard contractor/grantee performance and agency embarrassment. The DOC/NOAA operational programs supported by AGO must be successfully managed and monitored if NOAA is to fulfill its missions to the American public. However, as important as our acquisition and grants programs are, they are being conducted by an AGO workforce, thinly spread, lacking the depth required to ensure proper oversight and success. The success of DOC/NOAA's acquisition and grants programs is best described as our ability to obtain the necessary research, equipment and services needed, on time, and at the best value to the taxpayer. Without additional staff to conduct the increasing acquisition and grants workload of NOAA, workload will surpass capacity, negatively impacting NOAA's ability to manage critical acquisition and grants programs.

Increased Time to Complete Acquisition Workload

The time required to conduct acquisitions in NOAA has increased with the deployment of new IT Systems throughout the DOC. C.Request is the system used to electronically prepare and submit requisitions over the NOAA intranet to C.Buy, the acquisition production system. At deployment, the system was deemed operational, but, as in the fielding of any new system, it was understood that improvements would be needed before the system would be accepted as fully functional. Since then system improvements have been made and extensive user training has been conducted. However, the need for additional system improvements, user training and help desk support for a user community in excess of 2,300 DOC employees will continue for the foreseeable future. In FY 2012, NOAA will migrate its contract writing system to C.Award, an internet version of its current system. This migration will bring about the need to retrain about 250 users in the new system. NOAA AGO has been performing these functions without additional resources. Continually diverting the AGO acquisition workforce to conduct these functions will correspondingly divert scarce acquisition talent and diminish the capacity of AGO to properly conduct acquisition actions. The proposed request of additional acquisition staff are essential to the successful fielding of C.Request/C.Award. These additional personnel will afford us the ability to conduct user training while simultaneously conducting ongoing procurement actions.

Increased Risk Posed by Interagency Acquisitions

To meet the increasing need for acquisition services with diminishing resources, NOAA is evaluating obtaining acquisition support services from other government agencies through Interagency Acquisitions. Interagency Acquisitions offer the ability for agencies to acquire additional acquisition support by off-loading procurement actions to other agencies on a fee-for-service basis. However, as the GAO noted in their September 2006 report on DOD Acquisitions (GAO-06-800T), some (DOD) agency IGs have uncovered instances of improper use of interagency contracts, including issuing orders that were "*outside the scope of the underlying contract, failing to follow procedures intended to ensure the best pricing, and failing to establish*

clear lines of accountability and responsibility.” Their report further states that, in some instances, external fee-for-service arrangements may have lead to “*an inordinate focus on meeting customer demands at the expense of complying with sound contracting policy and required ordering procedures.*” As a result of these and similar issues, GAO designated interagency contracting as a government-wide high-risk issue in January 2005. It is important to note that the interagency acquisition services acquired by DOD were provided by non-DOD agencies, including some of those under consideration for use by DOC/NOAA. It is also important to note that DOD was held accountable for the improprieties committed by the servicing agencies. DOC/NOAA should carefully weigh the potential risks inherent to acquiring additional acquisition support via Interagency Acquisitions in comparison to increasing the acquisition capability within DOC/NOAA.

Increased Scrutiny of Acquisition and Grants Function

DOC/NOAA will continue to receive intense scrutiny of its acquisition and grants function. The DOC Inspector General listed Effective Management of Departmental and Bureau Acquisition Processes as DOC’s Number 2 Challenge in his September 2006 report entitled, *Top 10 Management Challenges*. In this report, the DOC IG has stated that “*adequate oversight of acquisition planning and execution is essential to ensuring that taxpayer dollars are spent effectively and efficiently and procurement laws and regulations are followed*”. The amount of procurement oversight that can be applied is directly related to the resources available to provide that oversight. In FY 2007, funding was not available to NOAA for personnel and travel costs necessary for an adequate oversight program. The funding requested within this request includes resources for travel and personnel costs required to provide adequate procurement oversight. NOAA processes nearly 2,000 grants every year, and like acquisition, represents an annual investment of approximately \$1 billion. End-to-end improvements in NOAA grants processes were developed in FY 2005. One such initiative, NOAA’s Grants Online, has been lauded as an E-Gov best practice, and will likely be adopted DOC-wide in the near future. In late FY 2009, AGO began improving the capabilities of the Grants Online System and utilizing it as an administration and assessment tool. This effort continued through FY 2010. These improvements will improve the efficiency of our Grants process and will directly benefit potential grantees and NOAA. It is expected that non-NOAA (DOC) users will rely upon NOAA’s expertise to provide training and assistance to other Bureaus within the Department when Grants Online is adopted as the DOC-wide Grants management system. However, completion of audits and grant closeout actions remain manual processes. The timely completion of these tasks by NOAA AGO was identified as a deficiency during the KPMG audit of the NOAA Financial function. Although NOAA AGO has made great progress in reducing the number of delinquent grant closeouts, there is a recurring need for AGO Grants personnel to perform these tasks. The additional resources requested for AGO’s Grants Management Division will address this need, without degradation of grants award processes, and will preclude a repeat finding on the next financial audit.

AGO Policy and Oversight Division – NOAA’s request will support actions associated with implementing recommendations made by the Government Accountability Office (GAO) in their June 2006 report to Congress (GAO-06-594, NOAA Acquisition Function). Among the recommendations included in this report is one for DOC/NOAA to regularly monitor the acquisition of goods and services acquired by collateral duty contracting officers in field offices. To meet this need, the Director of NOAA’s Acquisition and Grants Office promulgated policy for increased oversight of these collateral duty contracting officers (Field Delegates) performing acquisition functions under Delegations of Procurement Authority (DPA). To obtain the recommended oversight, NOAA AGO intends to conduct regular reviews of procurement actions conducted by collateral duty contracting officers and Government Purchase Cardholders, who

similarly exercise delegated procurement authority. Previous attempts to provide oversight of individuals exercising Delegated Procurement Authority within NOAA have been limited by resources insufficient to conduct the reviews required. This funding will provide dedicated personnel and funding sufficient to implement an effective procurement oversight program.

Oversight of the field delegates will involve on-site reviews of 80% of awards made by the audited delegate for the preceding 12 months. A formal entrance conference, execution of a standardized audit checklist, and an exit conference will be conducted. Appropriate corrective action plans will be received and monitored by AGO. The same is true for purchase cardholders, with the exception that where necessary, cardholders will submit their records to the auditor for a desk review at the auditor’s location. To minimize costs, consolidated reviews will be conducted. This means that if AGO is auditing a field delegate in a specific location, they will also conduct an audit of cardholders at the same location and/or bring in cardholders from other offices within commuting distance of the field delegate location. This action will specifically address the required action under the GAO Corrective Action Plan and will address one of the primary concerns government-wide regarding management of purchase card use. Effective oversight is essential to ensure adherence to Federal Acquisition Regulation (FAR), Departmental and NOAA policy. The failure to adequately oversee the work performed by individuals with this delegated acquisition authority puts the agency at risk for improper acquisition practices and subject the agency to both legal and monetary damages. Without proper oversight, the delegated procurement authority will need to be withdrawn and that workload brought into the NOAA acquisition offices for processing, resulting in greater resource needs.

Deliverables and Performance Goals

This increase supports the Department of Commerce Strategic Goal of “Observe, protect, and manage the Earth’s resources to promote environmental needs.” Specifically, this increase supports the NOAA Mission Support Goal in NOAA’s Strategic Plan. The schedule of milestones in support of this request includes providing continued annual funding of 12 month period of performance for centralized services at NOAA.

Performance						
Measure: Timeliness of contract and grant actions	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	N/A	90% for contracts 85% for grants	90% for contracts 85% for grants	90 % for contracts 85% for grants	90% for contracts 85% for grants	90% for contracts 85% for grants
Without Increase	75%+for contracts 70%+for grants	75%+for contracts 70%+for grants	75%+for contracts 70%+for grants	75%+for contracts 70%+for grants	75%+for contracts 70%+for grants	75%+for contracts 70%+for grants
Description: This measure tracks the percentage of on time contract and grants actions as measured against NOAA’s published Procurement Action Lead Time (PALT) schedule. Timeliness is measured against the published procurement action lead time metrics (for each acquisition package) and is measured from the receipt of a requisition to the date of award. The dates are tracked in the CRequest/CStar procurement system. Percentages represent meeting the published PALT for that transaction.						

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Program Support
Subactivity: Corporate Services

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	13
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	4,240
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	87
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	5
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	4,345

NOAA Wide Corporate Services & Agency Management Base: DOC Acquisitions Initiative (Base Funding: 109 FTE and \$13,651,000; Program Change: +1 FTE and +\$1,113,000): DOC requests an increase of 1 FTE and \$1,113,000 for a total of 110 FTE and \$14,764,000 to support implementation of a DOC-wide acquisition intern program.

Proposed Actions

With these funds DOC would establish a DOC Acquisition Intern Program, which would be a three-year, career ladder developmental program. The interns would be brought into DOC as either GS-7 or GS-9 candidates and would be required to achieve formal certification levels, developmental goals, and acquisition expertise to continue in the program and eventually graduate into a journeyman level GS-13 position. The program would be housed at NOAA and run by a GS-14 contract specialist who will be responsible for program developmental, recruitment, establishment and monitoring of program metrics and oversight, as well as mentoring of the intern candidates. As DOC's largest acquisition office, NOAA's robust acquisition community and expertise will serve the entire Department. All DOC Acquisition Interns would receive training and developmental assignments in multiple bureaus. This model would promote interoperability between bureaus, provide increased opportunities for employee growth and development, and foster a sense of organizational unity.

The FY 2012 request supports the following:

- Fill an entry-level weakness within the DOC acquisition community.
- Replenish the workforce; One-half of the DOC acquisition community is retirement eligible.
- Implement succession planning and be able to hire and train members of the acquisition workforce to replace those who will retire.
- Enable the acquisition workforce to strengthen the skill mix imbalance at the entry and journeyman levels.
- Improve the quality of work and reduce errors, thereby reducing cost through less oversight.
- Achieve the Office of Management and Budget (OMB) goals of strengthening the acquisition workforce (Improving Government Acquisition, M-09-25, dated 29 July 2009) and increasing the workforce (OMB's Acquisition and Contracting Improvement Plans and Pilots, December 2009) to improve acquisition management performance.

To achieve long-term success, the DOC will need a robust intern recruiting program that includes rigorous recruiting, hiring and training practices to capture, retain and replenish the decreasing acquisition workforce.

Statement of Need and Economic Benefits

DOC's acquisition workforce supports a diverse portfolio of acquisition instruments from construction of buildings and ships to planes and satellites. To support the diversity of acquisition needs, the workforce must be agile, flexible and highly trained in the planning, solicitation, award, administration and close-out of acquisitions and financial assistance funding mechanisms. The competition for acquisition professionals is fierce; agencies that can establish an entry-level program to attract candidates and provide them formal and on-the-job training have demonstrated the ability to retain those professionals throughout the training program and into their journeyman level position. Once established within the agency, acquisition professionals become vested in the mission, vision and goals of the agency and are more likely to remain with the agency for a longer period of time. Without a

means to attract entry-level candidates, DOC is left to compete for senior level professionals who are less likely to stay for long periods with the agency as other opportunities arise within a highly competitive career field.

Another benefit of an agency intern program is that the agency tailors development and oversees the quality of the intern’s training and development activities, thereby producing greater results and effectiveness for agency-specific acquisition mission needs.

The requested funds will provide the following benefits:

- Reduce the cost of acquiring talent, as well as provide skills mix balance and succession planning opportunities for DOC.
- Provide an agile, highly trained and specialized DOC-wide acquisition workforce to improve the effectiveness of DOC in providing acquisition solutions, as well as improve the quality and standardization of work products across DOC.
- An agile workforce will improve the quality of planning and oversight along with the efficiency and effectiveness of acquisition programs.
- Rotational assignments within DOC will give interns many opportunities for growth and the ability to apply a wide variety of skills between bureaus.

Deliverables and Performance Goals

The schedule of milestones in support of this request includes:

- Hire DOC acquisition Interns - FY 2012
- Train DOC acquisition Interns – FY 2012
- Establish program metrics to capture types of experience and skill mix – FY 2012
- Establish and track percentage of training hours achieved toward FAC-C Certification Levels I and II – FY 2012
- Establish metrics to track successful completion of the program – FY 2012
- Develop a central career management plan- FY 2012

Performance Measure:	FY	FY	FY	FY	FY	FY
Successful completion of internship program	2011	2012	2013	2014	2015	2016
With Increase	Target	Target	Target	Target	Target	Target
	N/A	0%	0%	80%	90%	95%
Without Increase	0%	0%	0%	0%	0%	0%
Description: This measure tracks the percentage of interns that complete the three year internship program.						

Performance Measure:	FY	FY	FY	FY	FY	FY
Percentage of FAC-C Certification Levels I and II achieved at the Department level	2011	2012	2013	2014	2015	2016
With Increase	Target	Target	Target	Target	Target	Target
	N/A	25%	50%	75%	90%	95%
Without Increase	0%	0%	0%	0%	0%	0%

Description: This measure tracks the percentage of DOC Acquisition Interns that have achieved FAC-C Certification. Federal Acquisition Community (FAC) is the acquisition improvement act (equivalent to Defense Acquisition Workforce Improvement Act (DAWIA)) for non-DOD Federal Agencies. It requires the acquisition workforce to meet degree requirements in business and training to achieve Level I, II and III certification. Certification is the achievement of meeting training and experience requirements for each level. In order to keep the certification active, each acquisition professional must obtain 80 hours of additional training every two years to stay current in acquisition policy, processes, and methods. Only certified acquisition officials may serve as contracting officer for the Federal Government. Stringent training for the Federal acquisition workforce keeps them on par with public sector acquisition professionals, and helps them to craft and drive better business solutions for the Federal Government.

PROGRAM CHANGE PERSONNEL DETAIL

Activity: Program Support
 Subactivity: Corporate Services – DOC Acquisitions Initiative

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Contracting Specialist	Silver Spring, MD	GS-14	<u>1</u>	105,211	<u>105,211</u>
Total			<u>1</u>		<u>105,211</u>
less Lapse		25%	<u>0</u>		<u>26,303</u>
Total full-time permanent (FTE)			<u>1</u>		<u>78,908</u>

Personnel Data	Number
Full-Time Equivalent Employment	
Full-time permanent	1
Other than full-time permanent	<u>0</u>
Total	1

Authorized Positions:	
Full-time permanent	1
Other than full-time permanent	<u>0</u>
Total	1

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Program Support
Subactivity: Corporate Services

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$79
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	14
11.8 Special personnel services payments	0
11.9 Total personnel compensation	93
12 Civilian personnel benefits	28
13 Benefits for former personnel	0
21 Travel and transportation of persons	5
22 Transportation of things	4
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	27
23.3 Communications, utilities and miscellaneous charges	2
24 Printing and reproduction	0
25.1 Advisory and assistance services	863
25.2 Other services	75
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	15
31 Equipment	1
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	1,113

NOAA Wide Corporate Services & Agency Management Base: Acquisition Staffing (Base Funding: 109 FTE and \$13,651,000; Program Change: +4 FTEs and +\$795,000): DOC requests an increase of 4 FTEs and \$795,000 for a total of 113 FTE and \$14,446,000 to support an acquisition and grants services initiative to build acquisition capacity within the Department to handle the increasing workload of grants and contracts.

Proposed Actions

This funding would allow each of the acquisition offices to fill critical vacancies to address the following deficiencies: increased focus on strategic acquisition planning, increased focus on proactive contract administration, and increased focus on closing-out completed contracts. The additional capacity also would allow for more one-on-one time to develop junior-level acquisition personnel and to focus on strategic sourcing initiatives across the Department to leverage the buying power of the Department both across DOC and in partnership with other Federal agencies.

The FY 2012 request supports the following actions:

- Replenish the workforce
- Implement succession planning
- Improve quality of work and reduce errors through standardization, peer reviews and increased training.

To achieve long term success, NOAA will need to put in place the rigorous recruiting, hiring and training practices to capture, retain and replace the decreasing workforce. Moreover, to accomplish and meet the DOC mission an increase in funding for resources who will ultimately add value to the mission is needed.

Statement of Need and Economic Benefits

NOAA Acquisition and Grants Office provides support to lines of business and staff offices, and a number of other DOC bureaus, with the planning, solicitation, award, administration and close-out of acquisitions and financial assistance funding mechanisms. Through its services, DOC Acquisition and Grants helps execute its day-to-day responsibilities and assists the agency in providing critical services to the Nation. Grants are awarded and administered through an electronic process using Grants Online. NOAA has implemented improved oversight of its delegated procurement authority and purchase card programs including adherence to acquisition regulation and policy, timely reconciliation and approval of purchase card statements, and compliance with mandatory training requirements by those with delegated acquisition authority. This initiative will increase DOC's qualified acquisition workforce and improve quality of work. Approximately one-half of the acquisition workforce is eligible to retire. Hiring additional contracts and grants specialists is critical to maintaining expertise within NOAA. An increasing number of NOAA acquisitions are for major systems involving state-of-the-art technology. This increase will allow NOAA to hire specialized contracts specialists to effectively handle these actions.

The requested funds will provide the following:

- Reduce time required to award contracts and grants.
- Reduce the time managers spend performing work typically assigned to their employees, leaving more time to manage, provide oversight and ensure risk reduction.

- Increase awards of new actions (obligating funds) and reduce cost by spending less time on administering existing actions.

The requested funding increase will allow NOAA to effectively manage its growing portfolio of acquisitions and grants.

Deliverables and Performance Goals

The schedule of milestones in support of this request includes:

- Hire DOC Acquisition and Grants Specialist - FY 2012
- Train DOC Acquisition and Grants Specialist - FY 2012
- Develop succession plans for each bureau - FY 2012
- Develop a central career management plan - FY 2012

Quality improvements will be assessed by examining the number of administrative modifications that need to be executed to resolve quality problems. Our Policy and Oversight Branch will compile areas of statistical relevance to examine for systemic and targeted areas of improvement.

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	N/A	80%	85%	87%	90%	95%
Without Increase	73%	73%	73%	73%	73%	73%

Description: This measure tracks the number of error-free contract and grant actions. Performance will be tracked via system error reports, peer reviews, and evaluation by the AGO Policy and Oversight Division.

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	N/A	77%	80%	83%	85%	90%
Without Increase	70%	70%	70%	70%	70%	70%

Description: This measure tracks the satisfaction level of AGO customers. Performance will be tracked through semi-annual customer surveys, individual action customer surveys, and outreach by the Director of AGO.

**PROGRAM CHANGE PERSONNEL DETAIL
(Dollars)**

Activity: Program Support
Subactivity: Corporate Services – Acquisition Staffing

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Contracting Specialist	Silver Spring, MD	GS-12	4	92,341	369,364
Contracting Specialist	Silver Spring, MD	GS-13	2	109,807	219,614
Total			<u>6</u>		<u>369,364</u>
less Lapse		25%	<u>2</u>		<u>92,341</u>
Total full-time permanent (FTE)			4		277,023

Personnel Data	Number
Full-Time Equivalent Employment	
Full-time permanent	4
Other than full-time permanent	0
Total	<u>4</u>

Authorized Positions:	
Full-time permanent	6
Other than full-time permanent	0
Total	<u>6</u>

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Program Support
Subactivity: Corporate Services

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$277
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	69
11.8 Special personnel services payments	0
11.9 Total personnel compensation	346
12 Civilian personnel benefits	101
13 Benefits for former personnel	0
21 Travel and transportation of persons	50
22 Transportation of things	4
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	60
23.3 Communications, utilities and miscellaneous charges	3
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	213
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	8
31 Equipment	10
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	795

IT Security: Enterprise Information Technology Security (Base Funding: 0 FTE and \$9,332,000; Program Change: +6 FTE and +\$5,100,000): NOAA requests an increase of \$5,100,000 and 6 FTE, for a total of 6 FTE and \$14,432,000, to improve enterprise information technology (IT) security through services provided by NOAA's Office of the Chief Information Officer (OCIO).

Proposed Actions:

This increase will fortify critical IT support of NOAA's mission by decreasing risks and enabling NOAA to increase the coverage and capabilities of the NOAA Cyber Security Center (NCSC) and critically enhance nationwide 24x7 security monitoring and incident response. Specifically, the requested increase will:

- Provide, operate, and maintain state-of-the-art NCSC facilities
- Provide critical enhancement to nationwide, 24x7 security monitoring and incident response (IR) capability by providing two 24x7 positions staffed by 10 contractors
- Continue improvements to NOAA's IR and reporting to meet all Federal Information Security Management Act of 2002 (FISMA) requirements
- Provide highly skilled federal and contract engineers
- Increase testing and evaluating of products for security vulnerabilities prior to enterprise deployment
- Implement cyber security services required by OMB Trusted Internet Connections (TIC) mandate
- Provide some backup security for the Department's Security Operations Center.

Statement of Need and Economic Benefits:

The frequency, sophistication, and maliciousness of cyber attacks in NOAA are rapidly increasing. NOAA experiences thousands of attacks every month. Intrusion detection alerts are doubling every year. NOAA is at risk to data integrity losses, network failures, and website compromises that have a significant probability of compromising the collection, processing, and dissemination of forecast and warning information to the public and other government institutions, leading to the possible loss of life and property. This request will reduce NOAA's high vulnerability to cyber threats and improve the NOAA-wide IT security posture by:

- Enhancing nationwide 24x7 security monitoring and incident response
- Reducing the backlog and duration of IT security investigations
- Controlling the number of affected devices
- Reducing IT security risk in new enterprise deployments
- Operating in a proactive mode rather than the current reactive mode
- Fortifying critical IT security support to NOAA programs and mission
- Improving NOAA's enterprise management of security risks, threats, and vulnerabilities
- Transforming the N-CIRT into the NCSC,
- Providing needed cutting-edge IT security technologies to support NOAA's infrastructure (maintaining state-of-the-art monitoring equipment and near real-time IT security event correlation),
- Reducing the backlog and duration of incident investigations,
- Controlling the number of affected devices,
- Providing highly skilled IT security engineers,

- Improving Federal Information Security Management Act of 2002 (FISMA) mandated incident reporting capabilities,
- Improving research and development for testing and evaluation of applications and technologies prior to procurement and deployment,
- Reducing IT security risk in new enterprise deployments,
- Improving the identification and remediation of security weaknesses,
- Provide some cost savings for the Department's Security Operations Center.

Our time-sensitive data and information products (required to be accurate and available 24 x 7) are at risk, which in turn puts the American public (and nations that depend on NOAA products) at risk of significant loss of life and property. NOAA experiences thousands of attacks every month, and responded to over 1,000 reported incidents during FY 2010.

Drivers include (but are not limited to):

- Clinger-Cohen Act (a.k.a. the Information Technology Management Reform Act of 1996)
- FISMA requirement for Certification and Accreditation (C&A) through Common Controls
- OMB Circular A-130
- OMB Memo M-04-25 of August 23, 2004
- US-CERT Concept of Operations
- DOC IT Security Program Policy and Minimum Implementation Standards
- NOAA IT Security Manual
- NOAA Strategic IT Plan
- NOAA IT Security Strategic Plan
- NOAA Enterprise Security Architecture
- NIST SP 800-41, -44v2, -45v2, -53 rev2, -53a, -61 rev2, -83, -86, -92, -94, -95 compliance
- DOC/OIG: Top Management Challenges Facing the Department (Final Report OIG-19884, January 2010) – IT Security: Continue enhancing the Department's ability to defend its systems and data against increasing cyber security threats

Base Resource Assessment:

Base resource assessment is provided in the Program Summary for the Corporate Services program.

Schedule and Milestones

Description of Milestone	Planned Completion Date
NCSC: Increase staff to support 24x7 operations	06/2012
NCSC: Enhance security services at second TIC Access Provider (TICAP)	07/2012
NCSC: Enhance security services at third TICAP	10/2012
NCSC: Enhance security services at fourth TICAP	02/2013

Deliverables

Outputs	FY12	FY13	FY14	FY15	FY16
Number of security consulting projects per year	11	13	13	13	13

Performance Goals and Measurement Data

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Full Authorization to Operate for all NOAA IT Systems (Complete C&A)	Target	Target	Target	Target	Target	Target
With Increase	N/A	99%	99%	99%	99%	99%
Without Increase	99%	98%	97%	96%	95%	94%

Description: The Certification and Accreditation (C&A) process requires a fully-tested system with a complete set of security documentation (e.g., approved security plan, risk assessment, disaster recovery plans, security testing), prior to being deemed certified. All systems in NOAA (approximately 120-150 at any given point in time) have been inventoried for their relative ranking as National Critical, Mission Critical, or Business Essential. This IT measure reports the percentage of NOAA IT Systems that have completed the C&A process and operate under a Full Authorization to Operate (ATO). Systems with full Authorization to Operate have completed Certification & Accreditation (C&A) prescribed by FISMA – security controls are in place for those systems and their FISMA documentation has been verified.

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Number of outstanding plans of action and milestones (POA&Ms) greater than 120 days past due	Target	Target	Target	Target	Target	Target
With Increase	N/A	<150	<140	<130	<120	<110
Without Increase	250	300	350	400	450	500

Description: The C&A process requires a fully-tested system with a complete set of security documentation (e.g., approved security plan, risk assessment, disaster recovery plans, security testing), prior to being deemed certified. All systems in NOAA (approximately 120-150 at any given time) have been inventoried for their relative ranking as National Critical, Mission Critical, or Business Essential. Plans of action and milestones (POA&Ms) are assigned, and those that are outstanding beyond 120 days past their planned completion date are reported in this IT measure.

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Number of Affected Devices	Target	Target	Target	Target	Target	Target
With Increase	N/A	<3,000	<3,700	<4,750	<6,650	<9,000
Without Increase	1,800	3,000	4,400	6,500	10,300	15,000

Description: NOAA uses a metric called “Affected Devices” to track the size and scope of computer security incidents. The metric tracks the number of information technology (IT) devices that were infected, compromised, or otherwise a victim of a security incident. The metrics are generated and reviewed quarterly. Reducing the number of affected devices reduces mission risk and helps ensure the availability of NOAA IT resources to execute the mission.

PROGRAM CHANGE PERSONNEL DETAIL

Activity: Program Support
 Subactivity: Corporate Services – Enterprise IT Security

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
IT Specialist (INFOSEC)	Silver Spring, MD	GS-14	3	105,211	315,633
IT Specialist (INFOSEC)	Silver Spring, MD	GS-15	3	123,758	371,274
IT Specialist (INFOSEC)	Fairmont, WV	GS-15	2	113,735	227,470
Total			<u>8</u>		<u>914,377</u>
less Lapse		25%	<u>2</u>		<u>228,594</u>
Total full-time permanent (FTE)			6		685,783

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	6
Other than full-time permanent	0
Total	<u>6</u>

Authorized Positions:

Full-time permanent	8
Other than full-time permanent	0
Total	<u>8</u>

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Program Support
Subactivity: Corporate Services – Enterprise IT Security

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$686
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	38
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>724</u>
12 Civilian personnel benefits	313
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	30
24 Printing and reproduction	0
25.1 Advisory and assistance services	1,470
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	950
31 Equipment	1,613
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>5,100</u>

IT Security: NOAAnet Single Enterprise Network (Base Funding: 0 FTE and \$0; Program Change: +2 FTE and +\$4,000,000): NOAA requests an increase of \$4,000,000 and 2 FTE for a total of \$4,000,000 and 2 FTE to acquire, install, operate, and maintain the NOAAnet Single Enterprise Wide Area Network (WAN).

Proposed Actions

NOAAnet will establish and operate a backbone network to provide secure, capable communications among NOAA's over 200 geographically-dispersed locations, implementing cyber security services required by the OMB Trusted Internet Connections (TIC) mandate. The network will employ carrier-provided Multi-Protocol Label Switching (MPLS) technology to establish traffic separation over independent Virtual Private Networks (VPNs) and enable communications throughout NOAA while assuring the separation required to support unique security boundaries and supporting differing performance requirements. It will provide economies of scale in network operations that will be applied to provide a more complete network management.

Statement of Need and Economic Benefits

The current state is inefficient: Each Line Office (LO) and sub-LO operates its own independent WAN. Network management operations are duplicated across all NOAA Line Offices. There are numerous single points of failure. Network management is uncoordinated with duplicate network operations staff and duplicative circuits, with multiple separate acquisitions.

The NOAAnet architecture will assure efficiency, security, scalability, and reliability in the modern operational and research computing environments, and provides much-needed upgrades to decade-old telecommunications networks. NOAAnet will achieve coordinated network management, moving towards a NOAA enterprise model. Finally, NOAAnet is a critical component of NOAA's operational and research missions. Without NOAAnet, planned data streams from NEXTGEN, AWIPS II, NPOES, and GOES-R will not be leveraged to improve the quality and utility of NOAA's environmental products and services.

Additionally, in November 2007, OMB announced the implementation of Trusted Internet Connections (TIC) in Memorandum M-08-05. Without NOAAnet, the Department of Commerce cannot implement its plan to meet the OMB TIC mandate.

The NOAAnet Single Enterprise Network is critical to allowing secure, efficient, and highly-reliable transport of NOAA's extensive environmental data to accomplish its mission and ensure timely delivery of NOAA data and information products (e.g., tornado warnings, hurricane forecasts, climate models, tide data). NOAAnet will continue to ensure that NOAA's observing and modeling systems provide high-quality information and data products for public use 24 hours a day, 7 days a week. It is through this investment in its critical IT infrastructure that NOAA moves forward to achieve its goals and serve society in the best possible way. NOAA's environmental information products and resource management services are essential public goods used throughout the nation. NOAA strives to meet the needs of its constituents and partners by providing a suite of products and services that continues to improve in scientific and technical quality, economic value, and social relevance.

Deliverables and Performance Goals

The schedule of milestones in support of this request includes:

1. Stand up of consolidated Network Operations Centers (NOCs) – 9/30/13

2. Complete transition of all NOAA Line Office Wide Area Networks (WANs) to the NOAAnet – 6/30/2016
3. Complete hardening of NOAAnet in order to produce a 99.9% uptime network – 9/30/2016

Performance Measure:						
Total annual average wide-area network downtime (in hours per year)	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	N/A	>26	<24	<21	<18	<9
Without Increase	>26	>26	>26	>26	>26	>26

Description: This measure tracks the annual network downtime. Network engineers monitor the systems comprising NOAA's wide-area networks and measure the cumulative amount of time that they are unavailable.

PROGRAM CHANGE PERSONNEL DETAIL

Activity: Program Support
 Subactivity: Corporate Services – NOAAnet

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
IT Specialist	Silver Spring, MD	GS-14	1	105,211	105,211
Network Engineer	Silver Spring, MD	GS-14	2	105,211	210,422
Total			<u>3</u>		<u>315,633</u>
less Lapse		25%	<u>1</u>		<u>78,908</u>
Total full-time permanent (FTE)			2		236,725
Personnel Data			<u>Number</u>		
Full-Time Equivalent Employment					
Full-time permanent			2		
Other than full-time permanent			0		
Total			<u>2</u>		
Authorized Positions:					
Full-time permanent			3		
Other than full-time permanent			0		
Total			<u>3</u>		

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Program Support
Subactivity: Corporate Services

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$237
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	15
11.8 Special personnel services payments	0
11.9 Total personnel compensation	252
12 Civilian personnel benefits	82
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	1,928
24 Printing and reproduction	0
25.1 Advisory and assistance services	140
25.2 Other services	370
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	50
31 Equipment	1,178
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	4,000

Under Secretary and Associate Offices Base (Base Funding 65 FTE and \$28,855,000; Program Change: 0 FTE and -\$935,000): NOAA requests a decrease of \$935,000 and 0 FTE for a total of \$27,920,000 and 154 FTE to provide the highest level NOAA leadership.

Proposed Action

The Office of the Under Secretary and Associate Offices has targeted efficiencies and savings in on-going activities within the base, primarily by finding efficiencies in purchasing goods and services in areas such as printing, travel, and supplies.

Statement of Need and Economic Benefits

The NOAA's Under Secretary and Associate Offices (USAO) provides the top leadership and management of NOAA, and represents NOAA's executive level liaison with other Federal agencies, Congress, NOAA stakeholders and private industry. NOAA leadership is committed to leading by example and believes that overhead costs should be minimized. This reduction will demonstrate to the agency that no programs are exempt from efforts to identify efficiencies and provide the best value to the taxpayer. Program activities consist of formulating and executing policies for achieving NOAA objectives, responding to executive branch policy decisions, and exercising delegated authority in committing NOAA to courses of action.

Deliverables and Performance Goals

This decrease will not impact the performance goals for the Office of the Under Secretary and Associate Offices due to efficiencies found in other programs.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Program Support
Subactivity: Corporate Services

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	-291
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	-452
25.2 Other services	-42
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	-116
31 Equipment	-34
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	-935

NOAA Wide Corporate Services and Agency Management Base: Payment to the DOC Working Capital Fund (Base Funding: 0 FTE and \$45,867,000; Program Change: 0 FTE and -\$1,389,000): NOAA requests a decrease of 0 FTE and \$1,389,000, for a total of \$44,478,000, to reflect NOAA's share of pass through savings that will result from efficiency efforts in DOC's common services charged through the Working Capital Fund.

Proposed Actions

With the requested decrease NOAA will be able to reduce required payments to the Department of Commerce Working Capital Fund for services including but not limited to services for public affairs, security, operations and management.

Statement of Need and Economic Benefits

The DOC Working Capital Fund provides centralized services to the Department's bureaus and to agencies outside the Department in the most efficient and economical manner possible. Goods and services are financed by charging operating expenses back to the customers.

Centralized services provided through the Working Capital Fund are mission critical. NOAA provides funding in support of the following Service Providing Offices: Office of General Counsel, Office of Public Affairs, Office of Security, Office of the Chief Information Officer, Office of Management and Organization, the Office of Financial Management, Office of Civil Rights, Office of Administrative Services and the Office of Acquisition Management.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Program Support
Subactivity: Corporate Services

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	-1,389
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>-1,389</u>

APPROPRIATION: OPERATIONS, RESEARCH, AND FACILITIES

SUBACTIVITY: NOAA EDUCATION PROGRAM

The objectives of this subactivity are:

- Provide advice and counsel to the Under Secretary of Commerce for Oceans and Atmosphere in matters pertaining to education
- Coordinate educational activities across NOAA
- Develop NOAA's Education Strategic Plan and policy to help ensure that NOAA's education programs and activities are based on NOAA science and support the agency's cross-cutting priority of promoting environmental literacy

The Office of Education directly implements and manages scholarship programs aimed at fostering American competitiveness in science by providing quality educational opportunities for the next generation. The Office of Education also offers competitive grant programs at the national and regional level to promote environmental literacy efforts through collaboration with external partners.

Educational Partnership Program

The Educational Partnership Program (EPP) provides financial assistance, through competitive processes, to students and Minority Serving Institutions (MSI) that train students and conduct research in NOAA mission sciences. The program's goal is to increase the number of students, particularly from underrepresented communities, who are trained and graduate in sciences directly related to NOAA's mission. FY 2009 accomplishments included a rigorous evaluation by an external team of NOAA's five Cooperative Science Centers; the recruitment of nine students to the Graduate Scholarship Program (its' largest to date); seven Graduate Science Program (GSP) trainees became NOAA employees; and 113 EPP funded students graduated with STEM degrees.

Environmental Literacy Grants and Programs

This activity includes the "Education Program Initiative" and "Competitive Education Grants" that were individual budget lines prior to FY 2011. The Office of Education coordinates education activities throughout NOAA through the NOAA Education Council and its working groups.

The Environmental Literacy Grants (ELG) program promotes public environmental literacy. ELG funds a broad range of informal and formal education projects implemented on state to national scales. ELG competitions align with NOAA's mission goals and Education Strategic Plan; require robust project evaluation; promote best practices; complement other federal granting programs; emphasize partnerships; and promote ocean and climate literacy. For FY 2009, 191 applications were reviewed and 18 new awards were made totaling \$7.3 million. Among these were eleven awards to aquariums that combined reach over eleven million visitors annually.

The Science Technology, Engineering and Mathematics (STEM) initiative with two core components that can contribute significantly to the agency's workforce development plan: (1) human capacity building (postdoctoral fellows training opportunities); and (2) institutional capacity building to increase the capacity of academic institutions in the areas of ocean, coastal, Great Lakes, climate and atmospheric science and marine stewardship.

Schedule & Milestones:

The following schedule and milestones apply to each of the out years FY 2012 – 2016 as well

Educational Partnership Program

- March: Award EPP Undergraduate Scholarships
- May: Award Graduate Sciences Awards
- August: Award 2nd of 5-Year Cooperative Science Centers Cooperative Agreements

OED Student Opportunities

- March: Award Hollings Undergraduate Scholarships
- August: Award Nancy Foster Scholarship

Environmental Literacy Grants and Programs

- Chair Monthly Education Council meeting
- June: Publish Environmental Literacy Grants funding opportunity in NOAA omnibus FFO
- August: pre-proposals are due
- October: full proposals are due
- December: panel review conducted
- April: Prior Fiscal Year awards are made

Performance Goals and Measurement Data

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Number of CSC students who graduate in NOAA core science areas	100	100	100	100	100	100
<p>Description: Each NOAA Cooperative Science Center (CSC) aligns with specific NOAA Line Organizations and develops education/outreach and research programs to train the next-generation workforce in the NOAA mission-related sciences. The data tracked represent the total number of CSC-supported students earning a degree at the Associate, baccalaureate, Master’s or doctoral level in science, technology, engineering, and mathematics (STEM) and related fields aligned with the CSCs’ research areas to increase the number and diversity of NOAA’s and the nation’s highly trained STEM workforce.</p>						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Number of CSC students hired by NOAA, NOAA contractors and other natural resource and science agencies at the Federal, State, local and tribal levels	12	12	12	12	12	12
<p>Description: Each of the five NOAA Cooperative Science Centers (CSC) builds sustainable capacity in education and research, increasing the numbers of highly trained graduates in NOAA’s mission sciences. These CSC graduates have expertise in NOAA mission-related fields and are available to hiring managers. The tracked data represent the total number of CSC graduates who are hired by NOAA, NOAA contractors and other natural resource and science agencies at the Federal, State, local and tribal levels.</p>						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Number of collaborative research projects undertaken between NOAA and CSC partners in support of NOAA mission	75	85	100	100	125	125
Description: Each NOAA Cooperative Science Center (CSC) aligns with specific NOAA Line Organizations and collaborates with NOAA scientists and engineers on research to better understand the significance of changes in the Earth's oceans, coasts, Great Lakes, weather, and climate. The data tracked represent the total number of CSC research projects that include a NOAA collaborator.						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Number of Hollings scholarship students trained in NOAA-mission related sciences, research technology, and education	100+	100+	100+	100+	100+	100+
Description: The Ernest F. Hollings Scholarship Program awards are designed to increase undergraduate training in oceanic and atmospheric science, research, technology, and education activities; foster multidisciplinary training opportunities; recruit and prepare students for careers as teachers and educators in oceanic and atmospheric science, and to improve scientific and environmental education in the U.S. Students receive support for academic assistance, and a 10-week, full-time NOAA internship providing "hands-on"/practical educational training experience in NOAA-related science, research, technology, policy, management, and education activities. The tracked data represent the total number of students who earn undergraduate degrees in oceanic and atmospheric science, research, science policy, technology, and science education fields.						

Performance Measure:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Number of Hollings scholarship students hired by NOAA and other natural resource and science agencies at the Federal, State, and local levels	25	25	25	25	25	25
Description: Students supported by the Ernest F. Hollings Scholarship Program who graduate have valuable real-world natural resource management and environmental science experience and are available to be hired in NOAA's mission-related fields as well as teachers and educators in oceanic and atmospheric science in the U.S. The tracked data represent the total number of Ernest F. Hollings Scholarship Program graduates who are hired by NOAA, NOAA contractors and other natural resource and science agencies at the Federal, State, local and tribal levels, in oceanic and atmospheric science, research, technology, and education fields.						

NOTE: NOAA's Office of Education assumes that: (i) the available graduates from the NOAA Cooperative Sciences Centers and the Hollings Scholarship Program will be hired by NOAA and

other natural resource and science agencies at the Federal, State, and local levels; and (ii) NOAA Cooperative Sciences Center graduates and Hollings Scholarship Program graduates will provide employment information that is made available to NOAA's Office of Education.

Program Changes for FY 2012:

Education Program/Initiative: NOAA Education Initiative (Base Funding: 0 FTE and \$2,000,000; Program Change: 0 FTE and -\$713,000): NOAA requests a decrease of \$713,000 and 0 FTE for a total of \$1,287,000 and 0 FTE to fund NOAA's Education Initiative. Base funding for this program is provided in the Competitive Educational Grants and Programs line. In the Consolidated Appropriations Act, 2010, Congress provided additional funds for activities related to education coordination and strategic planning activities across NOAA. With these additional funds NOAA accomplished education coordination and strategic planning activities across NOAA and managed existing competitive awards, which included multi-year grants awarded in FY 2010 and previous years. This additional amount is not required in FY 2012. The FY 2012 President's Request provides funding for the Education Initiative to continue to coordinate educational activities across NOAA and develop NOAA's Education Strategic Plan and policy. These efforts help to ensure that NOAA's education programs and activities are based on NOAA science and support the agency's cross-cutting priority of promoting environmental literacy. The Office of Education directly implements and manages scholarship programs aimed at fostering American competitiveness in science by providing quality educational opportunities for the next generation.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Program Support
Subactivity: Education Initiative

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	-48
22 Transportation of things	-6
23.1 Rental payments to GSA	-38
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	-1
25.1 Advisory and assistance services	0
25.2 Other services	-606
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	-14
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	-713

GLOBE: The Global Learning and Observations to Benefit the Environment (GLOBE) Program – (Base Funding: 0 FTE and \$3,000,000; Program Change: 0 FTE and - \$3,000,000): NOAA requests a decrease of \$3,000,000 and 0 FTE for a total of \$0 and 0 FTE. In the Consolidated Appropriations Act, 2010, Congress provided additional funds for NOAA to reengage with the GLOBE Program. With these additional funds NOAA funded many of the core activities of the GLOBE Program Office, and provided support and training for the network of U.S. partners that work to recruit, train, and mentor teachers in undertaking GLOBE activities. NOAA also provided specific support, including scientific advisement and access to data, to prepare for the Student Climate Research Campaign (SCRC) that will launch in the fall of 2011. This additional amount is not required in FY 2012. GLOBE is funded by contributions from NASA, and the FY 2012 President’s Request provides funds for NOAA’s broader Competitive Education Grants Program, for which GLOBE programs are eligible to apply. NOAA will continue to support GLOBE through participation in the Executive Management Board by leveraging the agency’s existing education and scientific infrastructure.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Program Support
Subactivity: GLOBE

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	-500
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	-2,500
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>-3,000</u>

Competitive Educational Grants Program: NOAA Competitive Grants Program (Base Funding: 0 FTE and \$12,000,000; Program Change: \$0 FTE and -\$6,957,000): NOAA requests a decrease of \$6,957,000 and 0 FTE for a total of \$5,043,000 and 0 FTE. In the Consolidated Appropriations Act, 2010, Congress provided \$12,000,000 to support NOAA's Competitive Education Grants Program. With these funds NOAA competitively awarded 17 new awards and funded nine continuing awards initiated in FY 2009, reaching over 27.1 million visitors in informal learning institutions with NOAA-funded exhibits or programs that integrate NOAA sciences, data, and other information. Through the FY 2012 President's Request, NOAA will support approximately four new awards at the requested funding level.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Program Support
Subactivity: Competitive Education Grants

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	-291
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	-6,666
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>-6,957</u>

B-WET Regional Programs: NOAA Bay-Watershed Education and Training (B-WET) Regional Program (Base Funding: 0 FTE and \$7,200,000; Program Change: 0 FTE and - \$7,200,000): NOAA requests a decrease of \$7,200,000 and 0 FTE for a total of \$0 and 0 FTE. In the Consolidated Appropriations Act, 2010, Congress provided \$7,200,000 for B-WET regional programs, which promote place-based, experiential learning in K-12 Science, Technology, Education, & Mathematics (STEM) education. With these funds NOAA supported Meaningful Watershed Educational Experiences (MWEE) through competitive funding to local and state education offices and government agencies, academic institutions, and nonprofit organizations. MWEEs integrate field experiences with multi-disciplinary classroom activities and instruction in NOAA-related sciences. While NOAA is not specifically requesting funds for B-WET, the FY 2012 President's Request provides funds for NOAA's broader Competitive Education Grants Program, for which qualified education program are eligible to apply.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Program Support
Subactivity: B-WET Regional

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	-16
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	-4
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	-937
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	-15
31 Equipment	-9
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	-6,219
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>-7,200</u>

APPROPRIATION: OPERATIONS, RESEARCH, AND FACILITIES

SUBACTIVITY: NOAA FACILITIES PROGRAM

The objectives of the Facilities Program subactivity are to:

- Provide effective long-range facility planning and capital investment planning
- Manage and execute NOAA's facility assessment and restoration program
- Manage NOAA's safety, environmental compliance, and energy efficiency programs
- Manage NOAA's lease and real property acquisition and disposal program
- Manage and execute NOAA's facility construction and modernization program

The NOAA Facilities Program line item supports objectives under the Department of Commerce Strategic Goal of "Observe, protect, and manage the Earth's resources to promote environmental stewardship." The program supports NOAA's mission by providing effective long-range facility planning and capital investment planning, facility condition assessment, and management and execution of NOAA facility repair and construction projects. The Facilities Management program is designed to keep facilities in well-maintained condition, return substandard facilities to their full potential, construct and modernize facilities to meet mission needs, and, dispose of facilities not required by mission need.

As NOAA-owned facilities age, investments in maintenance, repairs and modernization increase in priority. NOAA's owned capital assets total more than 400 owned buildings valued at approximately \$2.5 billion. The facility portfolio is aging, with over 30 percent of NOAA's owned buildings over 40 years old, and with 30 buildings over 60 years old (10 percent of the owned portfolio). Many facilities are well past their life expectancy and are in need of major repair or replacement to ensure that the facilities remain safe, effective, and efficient in support of NOAA's programs. The Facilities program provides funding to conduct facility condition inspections, and supports investments in necessary facility repairs and modernization. This line item also includes funds needed to support operations at NOAA's state-of-the-art laboratory building in Boulder, Colorado. This facility houses staff and programs from three NOAA line organizations (OAR, NESS, and NWS) as well as NOAA's program support units for the region. The work conducted in Boulder is necessary for NOAA's climate, weather research and support services. The line item also includes funding for security guard services at NOAA headquarters in Silver Spring, Maryland, and at its field locations in Boulder, Colorado and Seattle, Washington.

This program oversees a centrally-managed and integrated national project construction program. The Chief Administrative Officer (CAO) has responsibility for policy development and guidance, long-term facility master planning, and construction program planning and execution (for new facilities, as well as repair and modernization projects). The CAO organization is responsible for managing the total project life-cycle for facility construction and modernization projects, including environmental and safety projects, and projects designed to increase the energy efficiency of buildings. The program also manages NOAA's lease and real property acquisition and disposal, with responsibility for more than 2,200 leases.

The program also supports a sustainable and strategic facilities master planning process with a 10-year investment planning horizon, and specifically promotes progress toward

meeting the objective of increasing the number of facilities with improved co-location of NOAA services and partners. A robust facilities capability should lead to lower life-cycle cost of occupancy and facilities that better meet requirements in support of the NOAA mission goals.

The Facility Program provides the resources necessary to comply with existing federal, state, and local laws, regulations and safety requirements; and identify environmental compliance and safety issues requiring remediation. NOAA is responsible for ensuring continued compliance with applicable environmental and safety laws. NOAA continues to implement a management system to increase awareness, oversight and assessment; and ensure compliance with applicable laws and regulations.

Schedule & Milestones:

Below describes general project schedule for Facilities

General Project Schedule	
Program Phase	Schedule (Start - Complete)
Issue RFP	Q2
Award Contract	Q4
Construction	Complete in 18 months

Performance Goals and Measurement Data

Performance Goal:	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Improved safety and condition indices at NOAA's facilities (percent increase)	0%	1%	2%	2%	3%	3%
Description: This measure shows the impact of NOAA restoration work on rate of increase in improvements in safety. NOAA conducts a real property condition assessment annually through the Integrated Facilities Inspection Program (IFIP), a facility assessment model that uses survey data for each facility to identify the characteristics of the current inventory and estimate the deficiencies within the NOAA facility portfolio.						

Program Changes for FY 2012:

NOAA Facilities Management, Construction, and Safety: NOAA Facility Restoration and Modernization: (Base Funding: 46 FTE and \$4,500,000; Program Change +0 FTE and +\$10,000,000): NOAA requests an increase of 0 FTE and \$10,000,000 for a total of 46 FTE and \$14,500,000 to support restoration and modernization projects to address critical facility condition deficiencies, and improve safety and operating conditions in support of NOAA's mission.

Proposed Actions:

Within the NOAA Facilities Management & Construction and Safety budget line, \$4.5 million is currently designated for facility repair and restoration. NOAA is requesting an increase to that funding of \$10.0 million for a total of \$14.5 million to support the completion of repair and restoration projects at NOAA's owned facilities, specifically addressing aged and deteriorated building systems, and safety/environmental conditions. Of the request,

- \$2,100,000 will support relocation costs, procurement and installation of systems furniture, IT/phone equipment, and audio-visual equipment required to outfit this alternative office space as the result of a GSA-decision to force NOAA to move from the Richard Bolling (Kansas City) Federal Building, as part of the GSA Phase IV Modernization Plan.

In addition to the above, the following projects may be undertaken with the remaining FY 2012 and base funds:

- Addressing multiple safety and environmental compliance issues at the Western Regional Center (Seattle, WA);
- Addressing building system deficiencies at the Center for Coastal Fisheries and Habitat Research (Beaufort, NC);
- Addressing building system deficiencies at the Newport (OR) Aquaculture Laboratory;
- Addressing building system deficiencies in the laboratory building at the Platteville (CO) Field Site;
- Repair and replace the failing seawall at the Florida Keys National Marine Sanctuary;
- Repairs at the Barrow (AK) observatory; and
- Supporting investments to improve energy efficiency, reduce carbon emissions, and achieve compliance with Executive Order requirements.

Statement of Need and Economic Benefits

NOAA owns over 400 buildings valued at over \$2.5 billion. These buildings support NOAA's scientific and operational mission and programs, and are designed to provide a safe working environment for NOAA's employees and contractors—in laboratory and research spaces, offices, and operational buildings. NOAA's facilities are geographically dispersed and aging. As facilities age, repair and restoration of deteriorated or damaged building conditions or systems, replacement of building systems (roofs, HVAC, etc.), abatement of asbestos and other safety/environmental conditions, and installation of new systems to meet current fire safety code requirements is necessary to sustain operational capabilities and provide a safe working environment. Historically, NOAA's investments in facility restoration have not kept pace with recommended maintenance schedules. The result has been a large backlog of restoration

projects. Deferring restoration results in increased facility deterioration (one study estimated that repair backlogs increase by five to ten percent per year simply due to not addressing current repair needs), and decreased facility life.

NOAA Facility Restoration and Modernization

NOAA’s mission as a science agency requires that substantial investments be made in modernizing and maintaining its facilities. To assess the conditions of its current facility assets, NOAA conducts an annual assessment of current facility conditions of NOAA’s owned buildings, and identifies current and near-term investments in these assets required to address safety, building code and failing building systems at each facility. Building systems include: fire protection, HVAC, electrical, exterior enclosure (e.g., roofing), plumbing, and structural. Systems that require repair or replacement are identified as deficiencies that need to be addressed within the next three to five years. As NOAA’s facilities age, their condition will continue to deteriorate if necessary repairs and building system replacement are not funded, impacting both safety and mission continuity. Failure to address deficiencies increases the risks to employee safety, service disruptions and critical system failures. In FY 2012, NOAA will continue to use this funding to address deficiencies throughout the NOAA-owned facility portfolio.

Richard Bolling Federal Building Renovation

The General Service Administration is conducting a multi-year modernization of the RBF in Kansas City. GSA is requiring NOAA’s corporate offices currently located in the Federal Building to relocate to alternative leased office space in Kansas City. NOAA is being forced to vacate the Federal Building because of additional space requirements from other, larger federal tenants (such as the Department of Homeland Security). The funding will support procurement and installation of systems furniture, IT/phone equipment, and audio/visual equipment required to outfit this alternative office space.

Schedule and Milestones:

NOAA Facilities Restoration and Modernization

General Project Schedule	
Program Phase	Schedule (Start - Complete)
Issue RFP	Q3
Award Contract	Q4
Construction	Complete in 18 months

Kansas City Relocation

Multi-Year Project Schedule	
Program Phase	Schedule (Start - Complete)
Design Development	6/26/10 – 11/09/10
GSA Lease Acquisition	4/30/12 – 9/30/12
Tenant Improvements	4/01/12 – 12/30/12
Occupancy	1/01/13

Base Resource Assessment

Base resource assessment is provided in the Program Summary for the Facilities program

Performance Goals and Measurement Data

Performance Measure:							
Improved safety and condition indices at NOAA's facilities: Impact of NOAA restoration work on rate of increase in deficiencies	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	
	With Increase	N/A	2% reduction in rate of increase	2% reduction in rate of increase	1% reduction in rate of increase	0.4% reduction in rate of increase	0.3% increase in deficiency repairs
	Without Increase	N/A	4% increase in deficiency repairs	5% increase in deficiency repairs	5% increase in deficiency repairs	5% increase in deficiency repairs	5% increase in deficiency repairs
Description: NOAA conducts a real property condition assessment annually through the Integrated Facilities Inspection Program (IFIP), a facility assessment model that uses survey data for each facility to identify the characteristics of the current inventory and estimate the deficiencies within the NOAA facility portfolio.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Program Support
Subactivity: Facilities

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	10,000
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	10,000

NOAA Facilities Management, Construction, and Safety: Pribilof Islands Environmental Monitoring (Base Funding: 0 FTE and \$0; Program Change: +1 FTE and +\$758,000):

NOAA requests an increase of 1 FTE and \$758,000 for a total of 1 FTE and \$758,000 to restore funding for the long-term property transfer and environmental monitoring activities on Pribilof Islands.

Proposed Actions

The funding requested will provide OCAO the resources to manage the long-term responsibility for performance of property transfer activities, post-environmental remediation monitoring and supporting well and landfill cap maintenance on the Pribilof Islands (St. Paul and St. George).

This effort involves:

- Sampling groundwater at a total of 47 monitoring wells to verify the cleanup effort has been successful at multiple sites on both islands
- Maintenance and repair of groundwater monitoring wells
- Monitoring the structural integrity of the landfill closure caps and making required repairs at island landfills.

These monitoring activities on the Pribilof Islands are required by Alaskan environmental regulations and are expected to continue into the foreseeable future for heavily contaminated areas on St. Paul and St. George islands.

Statement of Need and Economic Benefits

Pribilof Islands remediation and long-term monitoring are mandated by a 1996 Two Party Agreement (TPA) between NOAA and the State of Alaska, and Public Laws 104-91 of 1996 and 106-562 of 2000. Property transfers from DOC/NOAA to local island entities are mandated by a 1984 Transfer of Property Agreement (TOPA). There are no viable alternatives to funding and compliance with these agreements and mandates.

PROGRAM CHANGE PERSONNEL DETAIL

Activity: Program Support

Subactivity: Facilities

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Environmental Engineer	Silver Spring, MD	ZP-IV	<u>1</u>	86,927	<u>86,927</u>
Total			<u>1</u>		<u>86,927</u>
less Lapse		25%	<u>0</u>		<u>21,732</u>
Total full-time permanent (FTE)			<u>1</u>		<u>65,195</u>

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	1
Other than full-time permanent	<u>0</u>
Total	1

Authorized Positions:

Full-time permanent	1
Other than full-time permanent	<u>0</u>
Total	1

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Program Support
Subactivity: Facilities

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$65
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>65</u>
12 Civilian personnel benefits	22
13 Benefits for former personnel	0
21 Travel and transportation of persons	16
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	5
25.1 Advisory and assistance services	650
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>758</u>

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Program Changes:

Congressionally Directed Projects (Base Funding: 0 FTE and \$15,230,000; Program Change: 0 FTE and -\$15,230,000): NOAA requests a decrease of \$15,230,000 to terminate the funding level that would continue under an annualized FY 2011 continuing resolution associated with the Congressionally directed projects identified in the Conference Report that accompanied the Consolidated Appropriations Act, 2010.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Program Support

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	-8
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	-4
25.1 Advisory and assistance services	0
25.2 Other services	-996
25.3 Purchases of goods & services from Gov't accounts	-18
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	-83
31 Equipment	-193
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	-13,928
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>-15,230</u>

APPROPRIATION: PROCUREMENT, ACQUISITION, & CONSTRUCTION

SUBACTIVITY: CONSTRUCTION

The objectives of the Construction subactivity are:

- Ensuring NOAA has safe, sound, and secure facilities and infrastructure to house employees.
- Ensure the workforce is equipped with the technology and equipment needed to ensure the uninterrupted accomplishment of its critical scientific and operational mission and programs.

NOAA's facilities constitute a significant and important capital investment, and are integral to NOAA's mission accomplishment. The Facility Modernization program will ensure excellence in NOAA's facilities, consistent with NOAA's Strategic Plan, Executive Order 13327 (*Federal Real Property Asset Management*) and Federal Real Property Council guidance. Improving the conditions of NOAA's facilities allows NOAA to accomplish our mission safely and successfully; it also promotes our attracting and retaining a high-performing workforce.

NOAA uses approximately 800 different facilities (i.e., both owned and leased buildings), and owns more than 400 buildings. NOAA's owned and leased buildings have a current replacement value (CRV) of over \$5 billion. Of that, more than 50 percent (442) are owned and operated by NOAA with a CRV of approximately \$2.5 billion. Our facilities are often subject to extremes of climate and weather, and therefore require higher levels of maintenance and are more prone to unplanned repairs and investments needed to keep them safe, secure and environmentally sound.

The major components of NOAA's Facility Modernization Program supported under PAC are major facility repair projects to restore and modernize facilities damaged by inadequate sustainment, excessive age, natural disasters, fires, accidents, or other causes; and major new construction projects to recapitalize, modernize, or consolidate facilities to promote improved operational and mission efficiencies.

The Office of the NOAA Chief Administrative Officer (CAO) has overall responsibility for the NOAA Facilities Program and is specifically responsible for:

- Providing capital investment planning guidance.
- Establishing enterprise-wide investment priorities facility repair and modernization investments.
- Executing repair and modernization projects as "Provider of Choice"—optimizing investments in strengthening NOAA's facility program.
- Oversight and corporate reporting on execution.
- Sustainment of corporate owned complexes.

In supporting NOAA's mission and program accomplishment, the Facility Modernization Program has established the following Program objectives:

- Integrate facility requirements as part of NOAA's planning, programming, budgeting and execution system;

- Sustain, restore and modernize NOAA's facilities to optimize NOAA program and mission accomplishment;
- Maximize opportunities for collocation within NOAA, and with NOAA and its partners to promote programmatic synergy and effective use of real property assets.

Program Changes for FY 2012:

NOAA Construction: NOAA Construction (Base Funding: 0 FTE and \$0; Program Change: 0 FTE and +\$900,000): NOAA requests an increase of \$900,000 and 0 FTE for a total of \$900,000 to support the project management costs of the Main Facility being constructed at the new Pacific Regional Center (PRC) on Ford Island in Honolulu, HI.

Proposed Actions:

NOAA received funding in the American Recovery and Reinvestment Act of 2009 (P.L. 111-5) and the Omnibus Budget Act of 2009 (P.L. 111-8) to complete the building construction phase of the PRC project and achieve full consolidation of its operations on the island of O'ahu, Hawaii, with construction of the Main Facility. The FY 2012 request will support NOAA's project management costs to ensure effective oversight and execution of the project. The current projected date for completion of the Main Facility is 2013.

Statement of Need and Economic Benefits

The Pacific Regional Center is a multi-phase, multi-year construction project to consolidate NOAA programs and operations (excluding the Honolulu weather forecast office) on the island of O'ahu into a single facility on federally-owned property at Ford Island. NOAA in Hawai'i manages an extensive portfolio of programs addressing fisheries, ocean, coastal, climate, and atmospheric issues in the Pacific. NOAA has funded the first two phases of the project: NOAA ship operations facility (completed in October 2007), and the marine science and storage facility (scheduled for occupancy in 2012). The Main Facility represents the final phase of the consolidation project. The benefit of this consolidated solution was recognized with the appropriation of funding under the ARRA and Omnibus Budget Act in 2009 for the building construction phase of the Main Facility, which is designed to consolidate and house over 600 staff currently dispersed over more than a dozen locations. By bringing its programs together into one facility, NOAA expects to realize benefits in improved operations and mission performance, longer-term operational savings, and opportunities for greater program collaboration and synergy—both within NOAA and with external partners.

The FY 2009 funding received under the American Recovery and Reinvestment Act of 2009 (P.L. 111-5) and the Omnibus Budget Act of 2009 (P.L. 111-8) has allowed NOAA to move forward with completion of the construction phase of the Main Facility—construction of the new facility, and adaptive re-use of historic structures where possible. The funding requested in FY 2012 will support NOAA's project management costs to ensure effective oversight and execution of the project.

Base Resource Assessment:

There is no base funding for this program.

Schedule and Milestones

Multi-Year Project Schedule	
Program Phase	Schedule (Start - Complete)
Business Case Analysis	Completed – 2005
Phase 1: Ship Operations Facility	Completed – 2007
Phase 2: Building 130:	Construction Award – 2009;

Construction/Occupancy	Complete 12/11
Main Facility Design	Completed – 2010
Phase 3a: Main Facility Construction	09/10 – 02/13
Phase 3b: Main Facility Outfitting and Occupancy	2013

Deliverables:

See table above

Outyear Funding Estimates (in thousands)

Pacific Regional Center	FY 2011 & Prior	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	Total
Change from FY 2012 Base	313,595	900	TBD	TBD	TBD	TBD	
Total Request	313,595	900	TBD	TBD	TBD	TBD	TBD

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Construction
Subactivity: NOAA Construction

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	900
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>900</u>

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BUDGET ACTIVITY: OFFICE OF MARINE AND AVIATION OPERATIONS

For FY 2012, NOAA is requesting an increase of \$32,653,000 and 10 FTE from the FY 2010 enacted level for a total of \$229,259,000 and 1,040 FTE for the Office of Marine and Aviation Operations. This increase includes \$13,291,000 and 5 FTE in inflationary adjustments.

BASE JUSTIFICATION FOR FY 2012:

Office of Marine and Aviation Operations Overview:

NOAA's Office of Marine and Aviation Operations (OMAO) operates a wide variety of specialized aircraft and ships to complete NOAA's environmental and scientific missions. OMAO is also responsible for the administration and implementation of the NOAA Diving Program, Small Boat Program and Aviation Safety Program, to ensure safe and efficient operations in NOAA-sponsored underwater activities, aviation and small boat operations.

OMAO initiates the development of annual fleet allocation plans; develops and updates long-range plans for inspection, repair, and operations of its fleet; provides centralized fleet management and coordination; updates standard fleet procedures; trains and certifies officers, crew members, and scientists in at-sea safety; conducts fleet-safety inspections; and provides medical guidance and support for NOAA ship, aircraft, and scientific personnel.

OMAO provides management of the NOAA Commissioned Corps. OMAO's Commissioned Personnel Center (CPC) (<http://www.noaacorps.noaa.gov/cpc>) manages recruitment, training personnel assignments, and payroll for the NOAA Commissioned Officer Corps. It also provides health-care contractual support for NOAA Commissioned Officers and Wage Marine personnel and their dependents. The NOAA Corps supports the fleet as well as NOAA Line Offices.

The Office of Marine and Aviation Operations of (\$179,959,000 and 1,030 FTE) budget is organized into three subactivities under the Operations, Research and Facilities appropriation:

- Marine Operations and Maintenance (\$131,969,000 and 923 FTE) includes Data Acquisition
- Fleet Planning and Maintenance (\$17,470,000 and 3 FTE) includes Fleet Planning and Maintenance
- Aviation Operations (\$30,520,000 and 104 FTE) contains Aircraft Services

In addition, OMAO also has one subactivity in the Procurement, Acquisition and Construction appropriation (\$2,000,000 and 5 FTE):

- Fleet Replacement (\$2,000,000 and 5 FTE) includes Fleet Capital Improvements & Tech Infusion and New Vessel Construction

The Office of Marine and Aviation Operations budget includes the following other accounts:

- NOAA Corp Commissioned Officers Retirement (\$28,269,000 and 0 FTE)
- Medicare Eligible Retiree Healthcare Fund (\$1,936,000 and 0 FTE)

Research and Development Investments:

The NOAA FY 2012 Budget estimates for its activities, including research and development programs, are the result of an integrated requirements-based strategic planning process. This

process provides the structure to link NOAA's strategic vision with programmatic detail and budget development, with the goal of maximizing resources while optimizing capabilities. OMAO requests \$77,853,000 for investments in R&D and infrastructure to support R&D in the FY 2012 Budget.

NOAA's strategic planning process makes specific reference to the objectives and milestones outlined in the NOAA 5-Year Research Plan for 2008-2012. The strict management of planning against these investment criteria, objectives, and milestones leads to NOAA budget proposals that reflect the research and development needs of the organization. The NOAA Research Council - an internal body composed of senior scientific personnel from every line office in the agency - is tasked with developing the 5-Year Research Plan, and provides corporate oversight to ensure that NOAA's research activities are of the highest quality, meet long-range societal needs, take advantage of emerging scientific and technological opportunities, and shape a forward-looking research agenda.

Significant Adjustments-to-Base (ATBs):

NOAA requests a net increase of 0 FTE and \$13,291,000 to fund adjustments to current programs for OMAO activities. The increase will fund the estimated FY 2012 Military pay raise of 1.6 percent and annualize the FY 2011 Military pay raise of 1.4 percent that applies to uniformed men and women of the NOAA Corps. The increase will also provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Service Administration (GSA).

Other Adjustments:

The NOAA FY 2012 Budget for OMAO also requests other adjustments in the amount of \$1,761,000 to restore funds that were anticipated in FY 2011 to be transferred from the Department of Agriculture related to the Promote and Develop (P&D) account. The P&D transfer represents funds derived from duties on imported fisheries products and are transferred to NOAA from the Department of Agriculture. The annualized FY 2011 Continuing Resolution provided \$36,056,800, including carryover, less than requested in FY 2011 President's Budget due to a downturn in the international fisheries markets. To address the difference between estimated and actual transfer amounts in FY 2011, NOAA allocated the shortfall in the transfer to each of its seven line offices, taking a 1.06 percent reduction to each Program, Project, or Activity (PPA) line. For FY 2012 NOAA requests an adjustment to offset the impact of the FY 2011 shortfall.

From Office	Line	To Office	Line	Amount
OMAO	All	OMAO	All	\$1,761,000

Administrative Cost Savings:

The Administration is pursuing an aggressive government-wide effort to curb non-essential administrative spending called the Accountable Efficiency Initiative (AEI). In order to be good stewards of taxpayer money the Federal Government will continue to seek ways to improve the efficiency of programs without reducing their effectiveness. As such, the President directed each agency to analyze its administrative costs and identify savings where possible. After reviewing its administrative costs, the Office of Marine and Aviation Operations (OMAO) has identified \$3,526,000 in administrative savings. OMAO has targeted a number of areas to achieve these savings, at both OMAO Headquarters level and throughout the program offices. Using NOAALink, OMAO anticipates saving money through more strategic sourcing of products and services. Consolidation of products will enable buying in bulk to reduce prices. Consolidation of services will result in dollar savings by reducing the number of contracts to be managed. In the area of human capital, OMAO expects to reduce its costs by canceling some planned hires, downgrading some positions, and working to reduce its workers compensation costs. Administrative savings in the area of logistics planning and

in general administrative support have been identified by limiting the use of overnight mail services as well as consolidating services through a single provider. OMAO has also identified savings tied to IT related items, primarily through delaying the refresh of computer equipment and eliminating redundant software licenses. In addition, OMAO expects to reduce costs through business process reengineering. The \$3,526,000 in administrative savings identified above represent real reductions to the OMAO's funding level and will help reduce overall spending by the Federal government.

Headquarters Administrative Costs:

In FY 2012, OMAO headquarters will use \$7,711,400, after instituting planned savings as a result of the AEI mentioned above, in funds to support general management activities, financial, budgeting, and IT related expenses, as well as supporting facilities and other general operating costs. These funds also include support for service contracts, utilities, and rent charges from the General Services Administration. As part of the AEI, OMAO has reviewed its Headquarters costs and will be able to reduce previously planned costs by \$1,967,000. Specifically, OMAO will use headquarters administrative funds to support the following:

Headquarters Program Support Type	Description	FY 2012 Amount	FY 2012 FTE associated with OMAO Line Office HQ
General Management & Direction	Includes Assistant Administrator's office, public affairs, information services	\$1,859,900	8.4
CFO Operations	Includes Budget, Finance and Accounting	\$5,020,700	15.0
CIO Operations	Includes IT-related expenses and other CIO related activities	\$1,716,600	5.0
CAO Operations	Includes Facilities and Security costs, as well as other CAO related activities	\$946,000	0
Human Resources	All HR services, including EEO	\$135,200	1.0
Procurement services, Acquisitions, and Grants Management Operations		\$0	0
Total before AEI savings		\$9,678,400	29.4
<i>AEI Savings</i>		<i>(\$1,967,000)</i>	-
Total post AEI savings		\$ 7,711,400	29.4

NOAA recognizes the need to improve the transparency of the policies and procedures used by its line office headquarters to bill component programs for management and administrative services. NOAA is currently re-evaluating, standardizing, and documenting these policies and procedures for each line office. Prior to the beginning of FY 2012, NOAA will publish its policies and procedures for assessing headquarters and administrative costs within the line offices on the NOAA CFO public website along with other budget and finance documents. NOAA looks forward to working with the Congress and other interested parties to increase the transparency and confidence in NOAA's financial management.

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APPROPRIATION: OPERATIONS, RESEARCH AND FACILITIES
SUBACTIVITY: MARINE OPERATIONS AND MAINTENANCE

The objectives of Marine Operations and Maintenance subactivity are to:

- Operate and maintain NOAA observation platforms to achieve in situ data collection in support of NOAA's highest priority mission requirements;
- Ensure the operational readiness and maximum capability and safety of the NOAA fleet;
- Develop plans for future ship support and replacement;
- Develop, with the guidance of the Fleet Council, annual ship allocation schedules based on the program requirements;
- Provide centralized management and coordination, scheduling, port services, operating procedures, and engineering support for NOAA's ships;
- Provide guidance and support for effective outsourcing and outsource data collection where appropriate;
- Provide end users with high quality real time data products and data visualization;
- Train and qualify NOAA personnel to ensure safe and effective diving operations;
- Provide specially skilled NOAA Corps Officers trained as engineers and scientists in NOAA program disciplines to provide leadership, operational and technical support;
- Train and certify NOAA Commissioned Corps officers, crew, and scientists in at-sea safety requirements for their positions;
- Provide oversight and support to enhance safety of NOAA's small-boat operations.

DATA ACQUISITION

Data Acquisition funding provides centralized management for NOAA's 18 active vessels in the NOAA Fleet during FY 2012, including the newest Fisheries Survey Vessels, *Pisces* and *Bell M. Shimada*, and supports charter vessels to meet additional requirements. NOAA vessels, ranging in length from 124 to 274 feet, conduct operations that support NOAA's programs in nautical charting, bathymetric mapping, fisheries research, ecosystem assessments, marine environmental baseline assessments, coastal-ocean circulation, and oceanographic and atmospheric research. In FY 2012, base funding will provide approximately 2,963 operating days at sea to support NOAA's highest priority programs and pursue NOAA specific objectives over the next five years. Additional days at sea are funded by individual NOAA programs.

FY 2010 Program Accomplishments:

- NOAA commissioned *Bell M. Shimada*, the fourth of a new class of fisheries survey vessels on August 25, 2010. The ship's primary mission is to study, monitor and collect data on a wide range of sea life and ocean conditions, primarily off the West Coast. The 208 ft. vessel will also observe environmental conditions, conduct habitat assessments and survey marine mammal, sea turtle and marine bird populations. The ship's state-of-the-art design allows for quieter operation and movement of the vessel through the water, giving scientists the ability to study fish and marine mammals without significantly altering their behavior.
- NOAA awarded a \$73.6 million American Recovery and Reinvestment Act contract to Marinette Marine Corporation located in Marinette, WI. This is for the construction of a new fisheries survey vessel, FSV 6, which will dramatically improve NOAA's ability to conduct surveys for fish, marine mammals and turtles off the U.S. West Coast and in the eastern tropical Pacific Ocean. The vessel will be the fifth state-of-the-art Oscar Dyson-class ship built for the agency.

- NOAA ships were integral in responding to the Deep Water Horizon oil spill in the Gulf of Mexico:
 - *Thomas Jefferson* completed three legs of operations taking water samples and testing advanced methods for detecting submerged oil while gathering oceanographic data in the area's coastal waters.
 - *Gordon Gunter* was on an oil detection mission in the vicinity of the Deepwater Horizon well head. During the cruise the ship collected water samples, conducted plankton tows, and employed echo sounders, autonomous underwater vehicles and other technologies to collect subsurface data.
 - *Pisces* performed a cruise to assess impacts of oil on Gulf of Mexico reef fish populations. The ship used echo-sounders to monitor for oil and gas releases in the immediate vicinity of the wellhead.
 - *Delaware II* performed Pelagic Longline surveys and water sampling around the periphery of the closure area and collected plankton samples at the surface and discrete depths.
 - *Oregon II* assessed the impacts of the oil spill on summer shrimp and groundfish
 - *Nancy Foster* assessed the impact of the oil spill on corals in the vicinity of the well head and characterized the impact of persistence oil spill to provide early warnings of oil entrainment.
 - *Henry B. Bigelow* performed wellhead monitoring and oil detection.

NOAA Fleet detail is provided below:

Vessel	Length-Class	Mission	Home Port	Status
<i>Ronald H. Brown</i>	274 ft. - I	1,4	Charleston, SC	Active
<i>Rainier</i>	231 ft.- II	3	Seattle, WA	Active
<i>Fairweather</i>	231 ft.- II	3	Ketchikan, AK	Active
<i>Ka'imimoana</i>	224 ft.- III	1	Honolulu, HI	Active
<i>Miller Freeman</i>	215 ft.-II	1,2	Seattle, WA	Active
<i>Mcarthur II</i>	224 ft.- III	1,2,4	Seattle, WA	Active
<i>Oregon II</i>	175 ft.- III	2	Pascagoula, MS	Active
<i>Thomas Jefferson</i>	208 ft.- II	3	Norfolk, VA	Active
<i>Gordon Gunter</i>	224 ft.- III	2	Pascagoula, MS	Active
<i>Oscar Elton Sette</i>	224 ft.- III	2	Honolulu, HI	Active
<i>Delaware II</i>	155 ft.- IV	2	Woods Hole, MA	Active
<i>Nancy Foster</i>	187 ft.- III	1,4	Charleston, SC	Active
<i>Hl'ialakai</i>	224 ft.- III	1,4	Honolulu, HI	Active
<i>Oscar Dyson</i>	208 ft. - II	2	Kodiak, AK	Active
<i>Henry B. Bigelow</i>	208 ft. - II	2	TBD	Active
<i>Pisces</i>	208 ft. - II	2	Pascagoula, MS	Active
<i>Bell M. Shimada</i>	208 ft. - II	2	West Coast	Active
<i>Okeanos Explorer</i>	224 ft.- III	1	Davisville, RI	Active

Mission:

1= Oceanographic Research
2 = Fisheries Research

3 = Hydrographic Surveys

4 = Environmental Assessment

The Marine Operations Center

The Marine Operations Center (MOC) has Atlantic and Pacific regional offices located in Norfolk, VA, and Seattle, WA, respectively. MOC provides regional fleet management, maintenance, stores supplies, repair facilities, data-processing facilities, operational support, and administrative support for

NOAA's vessels. The vessels are assisted by a small support staff at the homeport of most ships. NOAA vessels are staffed by NOAA Commissioned Corps officers, Wage Marine employees, and Electronics Technicians. NOAA vessels are strategically deployed based on the size, range, laboratory space, equipment, and accommodations of each ship necessary to meet project requirements. The Class I and II vessels have the size, endurance, and equipment to conduct surveys and investigations in the deep ocean outward from the continental shelf or in remote areas such as Alaska and Antarctica. The smaller Class III, and IV are designed for continental shelf and near-shore operations. Programs supported by ships are organizationally housed within NOAA's National Marine Fisheries Services (NMFS), Office of Oceanic and Atmospheric Research (OAR), National Ocean Service (NOS), NOAA Climate Service (NCS) and National Weather Service (NWS).

The NOAA Commissioned Personnel Center

The Commissioned Personnel Center (CPC) is responsible for active duty NOAA Corps officers. As part of OMAO, it is a unique personnel system within NOAA. CPC provides a specialized workforce to NOAA that has the skills to plan, prepare, and execute the acquisition of environmental and scientific data on land, at and under the sea, and in the air. CPC is responsible for the human resources activities for active duty NOAA Corps officers.

OMAO Headquarters

OMAO Headquarters division consists of Executive Affairs Division (EAD), Resource Management Division (RMD), Safety and Environmental Compliance Division (SECD), Information Management Division (IMD) and Health Services. Formulation of policies and procedures, development of plans and budgets, and management of NOAA Commissioned Personnel are conducted by OMAO personnel located at headquarters in Silver Spring, MD. In addition, OMAO Headquarters provide direction for labor relations activities, medical affairs, training, safety, and other personnel matters unique to commissioned officers and vessel employees assigned to the fleet.

The NOAA Dive Program

The NOAA Dive Center (NDC) provides diver training, safety standards, certification, technical advice, a standardized equipment program, and publishes the NOAA Diving Manual. NOAA divers perform over 1,500 dives annually in support of NOAA programs. Dives by NDC divers are primarily associated with diver training. Marine Center divers play a support role for various projects. Fleet diving activities include ship husbandry tasks such as clearing screws and sea strainers, conducting hull surveys for damage, and installing transducers. Ship divers also install tide gauges and other data gathering equipment and investigate multi-beam contacts. These activities provide cost savings to the NOAA fleet, enhance customer service and facilitate self-sufficiency on the seas.

The NOAA Small Boat Program

The NOAA Small Boat Program (SBP) is designed to reduce risk, promote standardization, and enhance the safety of NOAA's small boats. NOAA maintains over 400 small boats, which are operated and funded within the programs. The SBP monitors and conducts small-boat inspections, facilitates small boat activities by hosting workshops and sharing related information, and provides technical and engineering assistance to NOAA Line Offices concerning small boats. The SBP increases safety and ensures collaboration and compliance with standard policies and procedures among all Line Offices.

The NOAA Teacher at Sea Program

The NOAA Teacher at Sea (TAS) Program allows the participation of up to 30 teachers per year. Teachers at the kindergarten through college level spend time on NOAA vessels working with NOAA scientists. The teachers provide a valuable connection between NOAA and their students. The

popularity of the program led two TAS alumni to develop the spin-off, Teacher in the Air. NOAA's Teacher in the Air (TIA) program now flies between two-to-five teachers on NOAA aircraft each year. As of FY 2010, over 600 teachers have participated in the programs.

PROGRAM CHANGES FOR FY 2012:

Data Acquisition: Homeport Facility Lease Costs (Base Funding: 0 FTE and \$1,254,000; Program Change: +\$1,902,000 and +0 FTE) : NOAA requests an increase of \$1,902,000 and 0 FTE for a total of \$3,156,000 and 0 FTE to fund lease costs for the Marine Operations Center – Pacific, Newport, OR and Homeport of the *Okeanos Explorer*, Davisville, RI .

Proposed Actions:

OMAO requests funding for homeport lease and improvement costs at Newport, OR and Davisville, RI. Specific lease requirements are as follows:

Homeport	Lease Amount	Offset	Differential Required
Newport, OR	\$2,533,000	\$1,254,000	\$1,279,000
Davisville, RI	\$623,000	\$0	\$623,000

- Newport, OR will be the new home of the Marine Operations Center – Pacific (MOC-P) and the homeport of NOAA Ships *McArthur II*, *Rainier*, *Miller Freeman* and *Bell M. Shimada*. In 2006, a fire destroyed the pier at the current MOC-P location in Seattle, Washington requiring the relocation of NOAA ships throughout the Puget Sound area. In late 2008, NOAA began the process of reviewing the current facility lease, which expires June 30, 2011. In August 2009, NOAA selected the Port of Newport, OR, through a competitive lease award, to be the new MOC-P location and homeport facility. The new annual lease cost of \$2.53M is \$1.28M more than the current annual lease expenditure in Seattle, WA.
- Davisville, RI is the new homeport of NOAA Ship *Okeanos Explorer* and has been a temporary homeport for NOAA Ship *Henry B Bigelow*. The homeport is in close proximity to the University of Rhode Island and the Inner Space Center, partners in NOAA Ship *Okeanos Explorer* cruises. New facilities, including work space for the vessel's Remotely Operated Vehicle (ROV) were acquired through a lease. The annual lease cost for this new facility is \$623,000.

Statement of Need and Economic Benefits

NOAA homeport facilities vary in size, condition, and configuration, but all homeports serve the same purpose: to provide a safe and secure environment for a NOAA ship to tie up for periods of maintenance, crew rest, training, and staging and de-staging of cruises. Homeports generally consist of pier space with adequate water depth, a port office for on-site support personnel, and equipment storage areas. A permanent homeport guarantees access to a secure facility of sufficient water depth and safe operating conditions, and gives crew members a place to call home. Homeports have dedicated personnel providing logistical support to the vessel and receive mail, supplies and equipment.

Newport, OR – *Miller Freeman*, *McArthur II*, *Rainier*, *Bell M. Shimada*

In August 2009, following a competitive lease acquisition process, based on best value source selection procedures, NOAA selected the Port of Newport, OR as the new MOC-P location. MOC-P is NOAA's largest homeport and a critical hub for West Coast fleet operations. Design and construction is underway, and the new facility will be occupied in the summer of 2011. Outfitting costs are based on the OMAO contracted relocation specialist and CIO re-validation of the Pacific Marine Operations Center, Pacific Market Assessment Report estimates; and recent negotiations with the Port of Newport on tenant improvement cost allowances in the lease, which was signed August 7, 2009.

Davisville, RI – *Okeanos Explorer*

Davisville is the homeport for NOAA's first dedicated ocean exploration ship, *Okeanos Explorer*. Berthing and shore-side support facilities have been acquired through a lease. Construction of offices, warehouse space, and pier upgrades are underway. NOAA signed the lease in 2010 and will take occupancy in February 2011.

Base Resource Assessment: The base resources for this activity are described in the Marine Services base narrative.

Schedule & Milestones:

- FY 2012-2016 – Operations continue from NOAA Ship homeports without adverse effect on annual ship operating days.

Deliverables:

- Operations continue from NOAA Ship homeports without adverse effect on annual ship operating days.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Office of Marine & Aviation Operations
Subactivity: Marine Services

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	1,902
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>1,902</u>

Data Acquisition: NOAA Dive Center Improvement Plan (Base Funding: 2 FTE and \$900,000; Program Change: +5 FTE and \$790,000): NOAA requests 5 FTE and \$790,000 for a total of 7 FTE and \$1,690,000 for a total of 7 FTE and \$1,690,000 to address the findings released in the NOAA Florida Keys National Marine Sanctuary Dive Fatality Incident Report. To date, 21 of 33 recommendations have been completed and a dive/small boat program database has been developed to more efficiently and effectively track critical data and measure execution of mission operations. The additional funding is required to provide the staff resources necessary to implement and oversee three of the remaining 12 recommendations.

Proposed Actions

To meet the outstanding recommendations, NOAA will take the following actions:

- Implement on-site inspection program for all NOAA diving units every three years. This will help to increase safety and reduce the number of dive-related safety incidents and near-misses currently reported.
- Develop a diving standards and safety manual for conducting working dives, to establish all applicable regulations, standards and policies, and to comply with Occupational Safety and Health Administration (OSHA) requirements.
- Develop a web-based refresher training module in Oxygen Administration, Dive Procedures and Dive Regulations to increase safety and reduce the number of dive-related safety incidents and near-misses currently reported.
- Issue additional safety equipment (e.g., automated external defibrillators, diver recall systems and low-pressure alarm devices) to NOAA dive units in order to increase safety and reduce the number of dive-related safety incidents and near-misses currently reported.
- Develop a formalized science diver training and certification program to ensure science divers are properly trained in the “NOAA-way” of diving, thus increasing safety and reducing the number of dive-related safety incidents and near-misses currently reported.
- Hire additional personnel to handle the increased NDC annual workload requirements for administration, training, certification, equipment, medical, dive accident management support, NDC operations and maintenance, and unit inspections necessitate additional personnel.

Statement of Need and Economic Benefits

The NOAA Florida Keys National Marine Sanctuaries Diving Fatality Report included 33 corrective recommendations to mitigate similar incidents in the future. To date, six of the remaining open recommendations are in the final stages of being completed. Of the remaining six; three recommendations will be addressed with current funding. However, NDC needs additional funding for the following three outstanding recommendations:

- Individual recall units do not meet specifications of the contract and will need additional investment.
- Ensuring all diving conducted under NOAA’s auspices is accomplished safely, efficiently, and cost-effectively; additional FTE will support this recommendation.
- Ensuring compliance with all applicable diving regulations, standards and policies.

Base Resource Assessment: The base resources for this activity are described in the Marine Services base narrative.

Schedule & Milestones:

FY 2011:

- 7 recommendations completed

FY 2012:

- 5 recommendations will be complete
- Publish Annual Report –at the end of each calendar year
- FY 2011 - Publish Operations Manual for conducting Working Dives in accordance with OSHA regulations

Deliverables

- Training: The NOAA Dive Center will conduct a Diver Medical Technician Class, Working Diver Class, Divemaster Class, Standards of Training, Certification and Watchkeeping Medical Person-in-Charge Class, Diving Physician’s Course, Tethered Scuba Class.
- Publications: The NOAA Dive Center will issue an Annual Report and a new Operations Manual for conducting Working Dives in accordance with OSHA regulations.

Performance Measure:						
Number of dive units inspected / year	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	N/A	30	30	30	30	30
Without Increase	N/A	0	0	0	0	0
Description: One of the recommendations of the Dive Fatality Incident Report was to implement an on-site inspection program for all NOAA diving units every three years to increase safety and reduce the number of dive-related safety incidents and near-misses currently reported. One third of the 90 NOAA dive units will be inspected per year for a 3-year inspection cycle. Direct Dive Center oversight of each NOAA diving unit operation will provide a significant increase in dive operations standardization across the agency and provide essential opportunities for Dive Center personnel to recognize, foresee and prevent non-standard and unsafe operations.						
Performance Measure:						
Number of dive units with essential safety equipment	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	-	90	90	90	90	90
Without Increase	10	10	10	10	10	10
Description: The Dive Fatality Report recommended issuance of additional safety equipment (e.g., automated external defibrillators, diver recall systems, and low-pressure alarm devices) to NOAA dive units to increase safety and reduce the number of dive-related safety incidents and near-misses currently reported. This increase would allow all 90 NOAA dive units to be immediately outfitted with such equipment and to sustain this level of outfitting on an annual basis. Diver recall systems and low pressure alarms will serve to warn divers their gas consumption has reached a point where the diver needs to surface in order to maintain a safe ascent without exceeding the minimum air pressure requirement and to avoid drowning. Automated external defibrillators will be included as part of the NOAA Small Boats Program emergency medical equipment on designated small boats as an on-scene method of providing immediate medical assistance to injured divers. The introduction of this additional safety equipment greatly enhances NOAA’s ability to reduce the risk of dive-related safety incidents of the type that led to the Florida Keys NMS dive fatality.						

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Reduction in dive-related near miss accidents	Target	Target	Target	Target	Target	Target
With Increase	N/A	10%	11%	12%	13%	14%
Without Increase	N/A	0%	0%	0%	0%	0%
Description: This measure tracks the reduction in near miss accidents among NOAA divers.						

PROGRAM CHANGE PERSONNEL DETAIL

Activity: Office of Marine and Aviation Operations

Subactivity: Marine Operations & Maintenance

Title:	Location	Grade	Number of Positions	Annual Salary	Total Salaries
Supervisory Program Manager	Seattle, WA	ZA-04	1	87,306	87,306
Dive Safety Officer	Seattle, WA	ZA-04	1	87,306	87,306
Equipment Specialist	Seattle, WA	ZA-03	1	61,255	61,255
Training Specialist	Seattle, WA	ZA-03	1	61,255	61,255
Equipment Specialist	Seattle, WA	ZA-02	2	41,390	82,780
Secretary	Seattle, WA	ZS-03	1	33,414	33,414
Total			<u>7</u>		<u>413,316</u>
less Lapse		25%	<u>2</u>		<u>103,329</u>
Total full-time permanent (FTE)			5		309,987
2011 Pay Adjustment (0%)					0
2012 Pay Adjustment (0%)					<u>0</u>
TOTAL					309,987

Personnel Data

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	5
Other than full-time permanent	<u>0</u>
Total	5

Authorized Positions:

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Marine Operations & Maintenance
Subactivity: Data Acquisition

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$309
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	54
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>363</u>
12 Civilian personnel benefits	95
13 Benefits for former personnel	0
21 Travel and transportation of persons	81
22 Transportation of things	2
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	15
23.3 Communications, utilities and miscellaneous charges	17
24 Printing and reproduction	0
25.1 Advisory and assistance services	50
25.2 Other services	49
25.3 Purchases of goods & services from Gov't accounts	2
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	116
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>790</u>

Data Acquisition: Integrated Bridge System (Base Funding: 0 FTE and \$2,500,000; Program Change: 0 FTE and -\$2,500,000): NOAA requests a decrease of \$2,500,000 and 0 FTE for a total of \$0 and 0 FTE. In the Consolidated Appropriations Act, 2010, Congress provided an additional \$2,500,000 to purchase an integrated vessel electronics bridge system for any ship or boat within NOAA. With these additional funds NOAA acquired systems for a small vessel in the National Ocean Service's Sanctuaries Program. This funding is not required in FY 2012 as the integrated vessel electronics bridge system has been purchased and installed.

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Marine Operations and Maintenance

Subactivity: Marine Services

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	-2,500
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>-2,500</u>

APPROPRIATION: OPERATIONS, RESEARCH AND FACILITIES
SUBACTIVITY: FLEET PLANNING AND MAINTENANCE

The objective of the Fleet Planning and Maintenance (P&M) subactivity is to support maintenance activities for the NOAA Fleet. Regular and adequate maintenance allows NOAA ships to meet the rigorous demands of scientific, forecasting, and regulatory missions of NOAA. The funding provides for general maintenance and repair of NOAA ships including critical scientific and technical equipment necessary to meet stakeholder requirements.

The NOAA Fleet is subject to various requirements and regulations related to safety and emissions put forth by three organizations. The American Bureau of Shipping (ABS) certifies ships as seaworthy. The Fleet P&M program uses ABS rules to design maintenance program and conduct Material Condition Assessments (MCAs) on the NOAA Fleet. The Environmental Protection Agency (EPA) promulgates regulations related to ship emissions under the Clean Air Act. The regulations are intended to reduce harmful emissions from ships engines. The program maintains all engine and exhaust components in compliance with these regulations. The United States Coast Guard (USCG) promulgates regulations on all discharges from ships. The regulations are designed to protect marine environments from all discharges that can harm marine species. In addition, as the primary provider of fisheries and mammal surveys, the program has a unique operating role in marine sanctuaries that requires additional protections to maintain the pristine nature of these environments.

FLEET PLANNING AND MAINTENANCE

The Fleet P&M program allocates resources to individual ships based on maintenance requirements through planned fiscal year operations. Personnel provide fleet wide oversight, guidance and management of day-to-day operations. The allocation of resources is based on a five year maintenance schedule coinciding with mandated ABS certifications.

The Fleet P&M Program provides shipside and dry dock maintenance activities ensuring the NOAA Fleet is in compliance with all safety, environmental, and legal regulations. In addition, the program ensures state of the art on-board scientific equipment is operational and calibrated to meet mission requirements. Proper maintenance of ships and equipment is essential for NOAA to receive the full Return on Investment (ROI) of the capital investment. Proper maintenance activities allow ships to provide for the maximum Days at Sea (DAS) and reduce the likelihood of breakdowns or unscheduled maintenance, which impacts the ability of NOAA to meet stakeholder requirements.

NOAA ships are required to comply with a range of safety and legal regulations governing safety and operations. The ABS conducts regular ship inspection and issues a certification allowing NOAA ships to operate. Without the certification, NOAA ships would not meet minimum CFR (Code of Federal Regulations) regulations and would not operate. During the inspection process, ABS issues a MCA covering all shipboard systems. Planned maintenance activities are designed to comply with ABS requirements. In the event of MCA findings, NOAA corrects deficiencies through repairs and/or modifications and ships are certified safe to operate.

Schedule & Milestones:

Drydock and Dockside repair has a set maintenance period for each vessel based on ABS scheduling by ship class. The following ships are scheduled for Drydock in FY 2012; *Delaware II*, *Fairweather*, *Hii'ialkai*, *Oregon II*, *Pisces*, *Rainier*, *Ronald.H.Brown*, and *Shimada*.

Performance Goals and Measurement Data

	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Performance Measure: Annual Number of Fleet Casualty Reports (CASREPS)	170	160	140	110	70	20
Description: A decrease in CASREPS is one overall indicator of the success of a maintenance programs and depending on the severity of the CASREP, ultimately translates to a decrease in DAS lost to mechanical/electronic component failure.						

PROGRAM CHANGES FOR FY 2012:

Fleet Planning & Maintenance: Environmental Compliance for Vessels (Base Funding: 0 FTE and \$350,000; Program Change: +0 FTE and + \$3,365,000): NOAA requests an increase of \$3,365,000 and 0 FTE and for a total of \$3,715,000 and 0 FTE to bring the NOAA fleet into compliance with Environmental Protection Agency and United States Coast Guard regulations.

Proposed Actions:

A number of maritime environmental regulations are being enforced beginning in FY 2012, including stricter emissions requirements from the Environmental Protection Agency (EPA) and stricter discharge requirements from the United States Coast Guard (USCG). These new regulations will require significant changes to the existing vessel fleet to ensure compliance is maintained and monetary fines are avoided. The current program budget is not sufficient to capture the costs of the capital changes necessary to the fleet, which affects all NOAA vessels delivered before FY 2010. Proactively ensuring compliance with these new environmental regulations will allow NOAA to maintain its position as a leader in environmental stewardship and in executing the Administration's energy priorities.

In FY 2012, this program change will be applied to:

- Engine and Propulsion
 - Purchase and install upgrade kits for engines and generators for vessels to become Tier II-compliant as required by EPA and reduce greenhouse gas emissions.
 - Re-engine vessels with service life greater than seven years for Tier II compliance as required by EPA, increasing fuel efficiency and reduced greenhouse gas emissions.
 - Implement greenhouse gas reduce/efficiency improvement projects on vessels.
- Oils, Hydraulics and Discharges
 - Substitute biodegradable hydraulic oil in cranes and davits to reduce the impact of spills within environmentally sensitive waters, as required by EPA Vessel General permit.
 - Replace top-side hydraulic lines during special survey dry dockings to reduce risk of failure, as required by EPA Vessel General permit.
 - Upgrade or replace of Oily Water Separators (OWS) to ensure legacy systems meet international oil pollution requirements set by International Maritime Organization.
 - Install water treatment systems to reduce discharges and increase duration of operation in protected waters, as required by EPA Vessel General permit and NMSA.
 - Research and planning for ballast water treatment systems.
- Sustainment
 - Implement a design program to ensure future year ship conversions have correct specifications, and establish a training program that maintains and supports new equipment.

These actions were selected according to their status as legal requirements with market-ready solutions.

Statement of Need and Economic Benefits

All U.S. Government-owned public vessels are held accountable for meeting these new EPA and USCG regulations. The Department of Justice and Department of Commerce have waived the right for their respective federal agencies to be exempt from these regulations and the regulatory agencies may impose administrative penalties on other federal agencies.

The NOAA Fleet of small boats are symbols of NOAA's commitment to the environment, and must have the appropriate environmental protection equipment onboard to maintain a leadership role in environmental science collection. The current baseline budget is insufficient to cover the costs of capital improvements needed for environmental compliance. Each of the proposed actions has a direct and tangible economic benefit by preventing fines, reducing fuel costs over the life-cycle of the asset, and by reducing greenhouse gas emissions.

Schedule & Milestones:

In FY 2012:

- One engine upgrade kit installed on a NOAA vessel.
- Planning and initial installation of new propulsion on one T-AGOS class vessel.
- Biodegradable hydraulics installed on four vessels.
- Five green house gas reduce/efficiency improvement projects completed.
- New compliant Oily-Water Separators installed on three NOAA vessels.

In FY 2013 – 2016:

- Four additional ships receive engine upgrade kits.
- Three T-AGOS vessels repowered.
- Biodegradable hydraulics installed on 15 additional vessels.
- Twenty-five additional greenhouse gas improvement projects completed.
- Ten new compliant Oily-Water Separators installed
- Ballast Water Treatment systems installed on seven vessels.
- Biodiesel conversions on four vessels.

Base Resource Assessment: The base resources for this activity are described in the Fleet Planning and Maintenance base narrative.

Performance Goals and Measurement Data

Performance Measure: Ships Compliant with Environmental Regulations (%)	FY 11 Target	FY 12 Target	FY 13 Target	FY 14 Target	FY 15 Target	FY 16 Target
With increase	5%	10%	15%	25%	35%	45%
Without increase	5%	7%	9%	13%	15%	18%

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Office of Marine & Aviation Operations
Subactivity: Fleet Planning and Maintenance

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	500
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	500
31 Equipment	2,365
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>3,365</u>

Fleet Planning and Maintenance: Preventive, Corrective, and Deferred Ship Maintenance: (Base Funding: 3 FTE and \$17,470,000; Program Change: +0 FTE and \$6,200,000):

NOAA requests 0 FTE and \$6,200,000 for a total of 3 FTE and \$23,670,000 to continue correcting deferred maintenance items and decrease the number of Casualty Reports (CASREPS) that impact accomplished days at sea and scientific data collection for NOAA programs. This increase supports NOAA's Ship Recapitalization Plan to ensure its oldest ships can operate until replacements are delivered and to bridge the operational period until a Major Repair Period is implemented. It also builds on major vessel maintenance and repair investments that were made during FY 2010 using American Recovery and Reinvestment Act of 2009 (ARRA) funding. The proposed increase also accelerates the accomplishment rate of OMAO's shipboard maintenance management program to enhance at-sea safety and ship productivity and to meet emerging regulatory requirements.

NOAA will address the following items:

\$ 1,358,000	Deferred Maintenance Backlog – Electronics Engineering
\$ 2,742,000	Deferred Maintenance Backlog- Marine Engineering
\$ <u>2,100,000</u>	Increase Preventative Maintenance Accomplishment Rate
\$ 6,200,000	

Proposed Actions

A prioritized approach will be taken to correct the Maintenance Backlog by addressing the most critical items first. The most critical items are the items that affect the ship's ability to sail or items that will exacerbate over time and will incur greater expense to repair if left uncorrected for a significant time period. With this funding, after five years the preventative maintenance backlog for mission-related equipment and improvements to exterior and internal compartments to enhance crew safety and productivity will be eliminated. Four Fisheries Survey Vessels (FSVs) will be acoustically maintained annually, and each FSV acoustical signature tested every five years on a rotating schedule. The shipboard At-Sea Preventative Maintenance (PM) will be augmented with shore-based contractor support during winter in port periods, such that the current preventive-maintenance accomplished rate of 40 percent is increased by 10 percent per year.

1. The Deferred Maintenance backlog will be eliminated in five years. Annual amounts of approximately \$70,000 per ship/year for deferred electronics maintenance and approximately \$140,000 per ship/year for deferred mechanical maintenance are planned.
2. To increase the accomplishment rate of planned maintenance currently assigned to each crew, \$2,100,000 per year will be used to address systemic maintenance problems by supplementing crew-performed maintenance with contractor-performed maintenance. This will decrease lost days at sea resulting from casualties to systems, equipment or machinery.

Statement of Need and Economic Benefits

There has been an 89 percent increase in the number of significant mechanical/electronic failures as indicated in NOAA Ship Casualty Reports (i.e., Category 1 and 2 CASREPS) – from 95 in FY 2005 to 180 in FY 2008 – and a 44 percent increase in Lost Days at Sea (DAS) for NOAA programs – from 184 DAS in FY 2005 to 264 DAS in FY 2010. The FY 2012 increase will reduce lost Days at Sea and equipment failures due to lack of maintenance by a full ship-year of mission days by FY 2016, which translates to an annual improvement in the GPRA targets supported by the NOAA fleet. This increase will allow NOAA to properly maintain its aging ships and meet increasingly restrictive maritime standards while ensuring that new ships continue to meet mission requirements and meet performance targets. In recent years NOAA has faced a growing list of deferred maintenance items,

especially on older ships that have increasing need of the investment; the status quo reduces operational tempo and limits the value of scientific operations accomplished per unit ship cost.

Base Resource Assessment: The base resources for this activity are described in the Marine Services base narrative.

Schedule & Milestones:

Deferred maintenance activities will be completed on ships during the winter in-port periods. Specific milestones will be developed in late FY 2011 based on the material condition of the ships.

Deliverables:

- 17 Ships will receive Mechanical and Acoustic Deferred Maintenance
- 13 Ships will receive Electronics Deferred Maintenance
- 17 Ships will receive Preventative Maintenance

Specific deliverables will be developed in late FY 2011 based on the material condition of the ships.

Performance Goals

Performance measure						
Annual number of Fleet Casualty Reports (CASREPS)						
	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	170	160	140	110	70	20
Without Increase	200	210	220	230	240	250
Description: A decrease in CASREPS is one overall indicator of the success of a maintenance program and, depending on the severity of the CASREP, ultimately translates to a decrease in DAS lost to mechanical/electronic component failures.						
Performance measure:						
Operational Days Completed (fleet only)						
	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	2,963	2,963	2,963	2,963	2,963	2,963
Without Increase	2,963	2,663	2,638	2,613	2,588	2,563
Description: A decrease in DAS due to increased mechanical failures will negatively affect the data collection capacity and proportionately affect the GPRA target for each mission the fleet supports.						
Performance measure:						
Operational Days Completed (fleet only)						
	FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
With Increase	2,963	2,963	2,963	2,963	2,963	2,963
Without Increase	2,963	2,663	2,638	2,613	2,588	2,563
Description: A decrease in DAS due to increased mechanical failures will negatively affect the data collection capacity and proportionately affect the GPRA target for each mission the fleet supports.						

Performance Measure: Percentage of Living Marine Resources with Adequate Population Assessments and Forecasts, supports Measure 17b, 17c*							
		FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Oscar Elton Sette	Without Increase	0.60%	0.60%	0.60%	0.60%	0.60%	0.60%
	With Increase	N/A	1.30%	1.30%	1.30%	1.30%	1.30%
Gordon Gunter	Without Increase	-0.60%	-0.60%	-0.60%	-0.60%	-0.60%	-0.60%
	With Increase	N/A	1.00%	1.00%	1.00%	1.00%	1.00%
McArthur II	Without Increase	-0.50%	-0.50%	-0.50%	-4.0%**	-0.50%	-0.50%
	With Increase	N/A	0.90%	0.90%	-0.10%	0.90%	0.90%
*From NOAA Ship Recapitalization Plan (October 2007), Chapter 11, Figure 9, Annual % Change Projected from FY07 GPRA Performance Baseline. The increase in GPRA target for each ship listed was calculated to incorporate the change in capacity associated with this increase. A percent change in operating days for each specific ship based on a decrease in lost days and CASREPS was multiplied by the number of Adequately Assessed Living Marine Resources associated with that ship. Target adjusted for change in assumption from an average of 240 DAS to 178 DAS.							
**The Marine Mammal Protection Act (MMPA) and Endangered Species Act (ESA) mandate the frequency and content of NOAA's stock assessments. MMPA requires all listed species be reassessed every three years and "depleted" species every year. The ESA requires each listed species be reassessed every five years, or when new data becomes available. The change between FY 2014 and FY 2015 reflects the inability of NOAA to certify that listed species in the California Current Large Marine Ecosystem are in/are not in compliance with the three or five-year reassessment, as well as a lack of capacity due to McArthur II's Major Repair Period during FY 2014.							
Performance Measure: Reduce Hydrographic Survey Backlog Within Navigationally Significant Areas, Measure 18f*							
		FY 2011 Target	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target
Rainier	Without Increase	0%	0%	0%	0%	0%	0%
	With Increase	N/A	4.50%	4.50%	4.50%	4.50%	4.50%
Fairweather	Without Increase	-2.00%	-2.00%	-2.00%	-2.00%	-2.00%	-2.00%
	With Increase	N/A	3.90%	3.90%	3.90%	3.90%	3.90%
* From NOAA Ship Recapitalization Plan (October 2007), Chapter 11, Figure 15, Annual % Change Projected from FY 2007 GPRA Performance Baseline. The increase in GPRA target for each ship listed was calculated to incorporate the change in capacity associated with this increase. A percent change in operating days for each specific ship based on a decrease in lost days and CASREPS results in an increase to the hydrographic surveying performance measure. Target adjusted for change in assumption from an average of 240 DAS to 178 DAS.							

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Fleet Planning and Maintenance

Subactivity: Fleet Planning and Maintenance

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	5,800
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	400
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>6,200</u>

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APPROPRIATION: OPERATIONS, RESEARCH AND FACILITIES
SUBACTIVITY: AVIATION OPERATIONS

The objective of the Aviation Operations subactivity is to provide the following Aircraft Services:

- Provides NOAA with centralized aircraft systems management and coordination of airborne data collection flight time;
- Modifies, maintains, and operates NOAA's aircraft with a combined work force of specially trained civilians and officers of the NOAA Commissioned Corps to meet NOAA's airborne data-collection requirements;
- Maintains the airworthiness and operating standards of NOAA's aircraft for optimum safety along with standardization of scientific systems and aircraft;
- Operates the aircraft as public aircraft as well as adheres to the Federal Aviation Administration regulations with respect to the use of airspace, control of air traffic, and aircraft registration;
- Develops and operates prototype and operational scientific-research instrumentation aboard NOAA aircraft; conducts applied research to ensure validity of data collected; recommends and implements specialized modifications, equipment or personnel for particular missions or projects;
- Develops, with the guidance of NOAA's Fleet Council, annual flight-time allocation schedules based on airborne data-collection requirements;
- Provides centralized expertise in aviation safety to arrange for safe commercial aviation services for NOAA programs using outsourced aircraft; and
- Provides aviation life support equipment to NOAA Programs that utilize commercial aviation services.

The Aircraft Operations Center (AOC) (<http://www.aoc.noaa.gov/>), located at MacDill Air Force Base in Tampa, FL, ensures the availability and readiness of NOAA's uniquely configured aircraft. The AOC operates a fleet of 12 aircraft used as observation platforms equipped with comprehensive data-collection systems in support of missions related to the Earth's environment, coastal and marine resources, and severe weather. OMAO also ensures that outsourced aviation operations are conducted safely by providing technical support, services and equipment to NOAA programs.

FY 2010 Program Accomplishments

- NOAA Aircraft, provided survey support following Nor'easter:
NOAA's Cessna Citation (N52) acquired remote sensing imagery along the Hampton Roads, VA shoreline following a major storm that impacted the Mid-Atlantic region November 12-14, 2009. The aircraft documented changes in shoreline due to flooding at Whalehead Beach and examined a grounded barge in Virginia Beach. The surveys provided critical aerial imagery to the port community, local officials and residents impacted by the storm and resulting flooding in Hampton Roads.
- NOAA G-IV Aircraft dispatched to gather winter storm data:
NOAA's Gulfstream IV-SP aircraft conducted flights over the North Pacific Ocean to help fill gaps in atmospheric observations. During that period NOAA crew flew 310.8 hours, covering 134,000 nautical miles. 634 GPS dropwindsondes were launched, of which 97.2% provided good detailed data on 12 intensifying winter storms. Flying out of Yokota Air Force Base in Japan, the OMAO-operated plane collected wind speed and direction, pressure, temperature and humidity information from data sparse regions. The data was sent via satellite to global operational weather forecasting centers and fed into sophisticated computer forecast models.
- Responded to the devastating earthquake in Haiti:

NOAA Aircraft Operations Center and the NOAA National Geodetic Survey dispatched the NOAA Cessna Citation II aircraft to conduct surveys of quake-ravaged areas, giving responders the data they needed to assess damage and plan recovery efforts.

- NOAA aircraft gathered observations in flooded Red-River Region:
NOAA Shrike Commander and NOAA Jet Prop Commander aircraft stationed in Minneapolis, MN helped the North Central River Forecast Center improve their flood forecasts with real time observations. The Red River, along the Minnesota-North Dakota border, approached record flood levels. The aircraft took video and photographic footage of the river in flood stage. They were able to observe ice jams, standing water in farm fields, and other conditions in the watershed. The hydrologists can use this data to refine their models.

The following table provides information on the aircraft fleet for the current program (missions and support fluctuate based on program priorities):

Aircraft	Type	Mission	Location
HEAVY:			
(2) Lockheed WP-3D	4-engine turbo prop	Air quality (OAR) Hurricane research (OAR) Hurricane reconnaissance (NWS) Ocean winds (NESDIS, NWS) Hurricane intensity forecasting (NWS)	MacDill AFB, FL
(1) Lockheed WP-3C	4-engine turbo prop	Air quality (OAR) Climate research (CS) Hurricane reconnaissance (NWS) Ocean winds (NESDIS, NWS)	MacDill AFB, FL
MID:			
(1) Gulfstream G-IVSP	2-engine turbo jet	Hurricane surveillance (NWS) Winter storm reconnaissance (NWS) Hurricane intensity forecasting (NWS) Atmospheric research (OAR)	MacDill AFB, FL
LIGHT:			
(4) Dehavilland Twin Otter DHC-6	2-engine turbo prop	Aerial surveys (NMFS) Atmospheric research (OAR)	MacDill AFB, FL
(1) King Air	2-engine turbo prop	Photogrammetry (NOS) Multi-spectral scanner (NOS) Post-storm damage assessment (NOS) Airborne topographic LIDAR (NOS, NWS)	MacDill AFB, FL
(2) Rockwell Shrike Commander/AC500S	2-engine reciprocating	Snow survey (NWS) Fisheries observations (NMFS) Marine mammal observations (NMFS)	Minneapolis, MN MacDill AFB, FL
(1) Jet Prop Commander AC/695	2-engine turbo prop	Snow surveys (NWS) Fisheries observations (NMFS) Marine mammal observations (NMFS)	Minneapolis, MN

Schedule & Milestones:

Aircraft Services annual schedule and milestones are governed by the Aircraft Allocation Plan as agreed to and signed by the NOAA Fleet Council. The Aircraft Allocation Plan details the individual NOAA mission projects to be conducted on each aircraft, and the timeframe for each project. The annual Aircraft Allocation Plan can be referenced on the OMAO website at <http://www.oma.noaa.gov/airallocation.html>.

Deliverables/Outputs:

The program performs 2,845 mission flight hours per year. In addition to flight hours, flight instructions are documented and agreed upon by both OMAO and the respective line office for each individual project conducted on a NOAA aircraft. The project instructions detail the deliverables for each project, e.g. hurricane reconnaissance or surveillance; snow surveys, or marine mammal assessment. The flight instructions will also detail mission success criteria and operational tempo requirements.

Performance Goals and Measurement Data

	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16
	Target	Target	Target	Target	Target	Target
Performance Measure: Savings to the nation from Hydrologic forecast from airborne collected data (\$x1,000)	\$633,864	\$633,864	\$633,864	\$633,864	\$633,864	\$633,864
Description: Dollars saved by nation from Hydrologic forecast from airborne collected data.						
Performance Measure: Number of Flight Hours	2,845	2,845	2,845	2,845	2,845	2,845
Description: Mission flight hours per year						

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PROGRAM CHANGES FOR FY 2012:

Aircraft Services: Decrease in Operating Funds for NOAA Aircraft Services (Base Funding: 104 FTE and \$30,520,000; Program Change: 0 FTE and -\$1,162,000): NOAA requests a decrease of \$1,162,000 and 0 FTE for a total of \$29,358,000 and 104 FTE in Aircraft Services. Reflecting a reprioritization of research missions, and the completion of data acquisition needs for the CALNEX mission, NOAA proposes cancelling the Ocean Winds and CALNEX missions in FY 2012, reducing flight hour requirements by 275 hours.

Statement of Need and Economic Benefits

At the funding level, OMAO will continue to support NOAA research missions throughout the agency. Flight hours will be used for hurricane research and snow surveys. Also supported will be marine mammal population and other living marine resource assessments and coastal erosion surveys.

Base Resource Assessment: The base resources for this activity are described in the Aviation Services base narrative.

Performance Goals and Measurement Data

Performance Measure:	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16
Number of Flight Hours	Target	Target	Target	Target	Target	Target
Without decrease	2,845	2,845	2,845	2,845	2,845	2,845
With decrease	2,845	2,570	2,570	2,570	2,570	2,570
Description: Mission flight hours per year						

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Office of Marine & Aviation Operations

Subactivity: Aviation Services

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	-46
11.8 Special personnel services payments	0
11.9 Total personnel compensation	-46
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	-302
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	-35
24 Printing and reproduction	0
25.1 Advisory and assistance services	-35
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	-744
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	-1,162

APPROPRIATION: PROCUREMENT, ACQUISITION AND CONSTRUCTION
SUBACTIVITY: FLEET REPLACEMENT PROGRAM

The objectives of the Fleet Replacement Program (FRP) are to develop the requirements, business case acquisition strategies, funding profiles, contractual instruments and preliminary arrangements necessary to design, equip, construct or modernize the ships and ship systems required to safely meet NOAA's Days at Sea (DAS) collection requirements. The current NOAA Fleet faces challenges similar to other observational infrastructure including expanded mission requirements, age and obsolescence, and finite resources for recapitalization. NOAA has successfully developed, adapted, and/or fielded a number of technologies that have enhanced the capabilities of NOAA ships and is currently evaluating a number of technologies that have potential to contribute to more effectively and efficiently meet collection requirements. While technology is expected to allow NOAA to make incremental advances over its current capabilities in the near-term, long-term technological advances could have a dramatic impact on how the NOAA Fleet is configured.

The Fleet Replacement Program receives sustainment funding that provides for planning and oversight of Fleet Capital Improvement and Technology Innovation (FCITI) activities and ensures a cadre of government experts is available to evaluate requirements, review proposals, and monitor progress towards achieving goals. In addition to sustainment funding, FCITI funding varies depending on the specific tasks delineated in the NOAA Ship Recapitalization Plan (Ship Recap Plan) that are to be performed in a given fiscal year. For example, specific funding was provided in the FY 2010 appropriation for the *Oregon II* and the *Rainier* Major Repair Periods (MRP). In FY 2009, New Vessel Construction (NVC) received funding for FSV6 construction through the American Reinvestment and Recovery Act (ARRA). The Program Gap Analysis section will provide further information on NVC Ship Recap Plan tasks for the performance period.

NOAA Ship Recapitalization Plan

In October 2006, NOAA conducted an Analysis of Alternatives (AoA) study to determine the most cost effective service delivery method to address NOAA mandates. The AoA was conducted in two parts: (1) a cost-effectiveness economic analysis based on guidance provided in the Office of Management and Budget (OMB) Circulars A-11 and A-94 and (2) a program performance analysis that assessed how changes in ship capacity and capability would impact NOAA Government Performance and Results Act (GPRA) measure results.

The AoA evaluated "New Build," "Service Life Extension," "Charter," and "Conversion" vessels. "New Build" is defined as the construction of a new ship is the most cost effective alternative. "Service Life Extension" extends the service life of a current ship with extensive dry dock overhaul or a more limited dry-dock overhaul using a Major Repair Period (MRP). "Charter" is using non-governmental ships to perform mission requirements. "Conversion" is defined as converting an existing ship to meet mission requirements.

The Hydrographic Services Improvement Acts also reiterate NOAA's responsibilities "to fulfill the data gathering and dissemination duties... [of] acquiring and disseminating hydrographic data, promulgate standards for hydrographic data..." and the authority to "operate vessels, equipment, and technologies necessary to ensure safe navigation and maintain operational expertise in hydrographic data acquisition and hydrographic services." The 2002 HSIA also authorizes NOAA to "carry out activities authorized under this title that enhance homeland security, including...hydrographic surveys...."

In order to link AoA results to the fleet configuration and DAS requirements, NOAA developed the Fleet Replacement Program to inform the "New Build," "Service Life Extension," and "Conversion" activities.

NOAA utilized a systematic approach to linking NOAA mandates and resulting DAS requirements with fleet configuration. NOAA worked with stakeholder line offices within NOAA to translate NOAA mandates into DAS and ship capability requirements. Collectively the requirements provided input to an analysis of the current configuration of the NOAA Fleet and the proposed configuration. Rapidly aging ships and scientific equipment require a reconfiguration of the NOAA Fleet over the next fifteen years.

The resulting NOAA Ship Recapitalization Plan (2008)

(http://www.oma.noaa.gov/publications/08_ship_recap_plan.pdf) will reduce the average age of the NOAA fleets from 26.9 years and reduce the number of ships from 15 ships having more than 30 years of service, including one with more than fifty years of service.. In order to meet the “Build” requirements identified in the AoA, the Ship Recap Plan addresses the acquisition of new classes of Fisheries Survey Vessels (FSVs), and NOAA Survey Vessels (NSVs). In order to meet the SLE requirements, the Ship Recap Plan addresses SLEs and MRPs to realize the full ROI by providing for replacement of structural, propulsion, and scientific equipment. The investment in scientific equipment ensures NOAA remains at the forefront of applied research and development. The Ship Recap Plan does not currently provide for any ship conversions.

PROGRAM CHANGES FOR FY 2012:

Fleet Capital Improvements: Repair Periods for NOAA Ship *Ka'imimoana* and *Miller Freeman* (Base Funding: 0 FTE and \$1,000,000; Program Change: +\$11,626,000 and +0 FTE): NOAA requests an increase of \$11,626,000 and 0 FTE for a total of \$12,626,000 and 0 FTE to provide for the highest priority repairs for the NOAA Ships *Ka'imimoana* and *Miller Freeman*.

The funds requested will be used as follows:

- Structural: \$6.0M
- Mechanical: \$3.2M
- Electrical: \$1.7M
- Electronics upgrade: \$0.7M

Proposed Actions

The additional funding will accelerate the NOAA Ship Recapitalization Plan timeline for NOAA Ships *Ka'imimoana* (KA) and *Miller Freeman*. Repair periods will be performed on the KA and *Miller Freeman* in FY 2012 replacing a FY 2020 Service Life Extension (SLE) on the KA and moving forward the planned FY 2013 Major Repair Period (MRP) on *Miller Freeman*.

A 2010 Material Condition Assessment (MCA) of KA, based on a FY 2009 dry dock period and a subsequent fleet inspection, revealed significant deterioration in multiple shipboard systems. NOAA can provide temporary repairs, but an overhaul will be necessary. The funding will provide for repairs to structural and mechanical systems. The KA is the only ship in the NOAA fleet capable of servicing the Tropical Atmosphere Ocean (TAO) Array, supporting critical El Niño/La Niña forecasting and climate science missions. In FY 2009, the KA experienced 34 lost days out of 145 due to repairs. Furthermore, mission capability was impacted because of restrictions placed on the aft cranes and winches and current, temperature and depth (CTD) winch and deck cranes.

The *Miller Freeman* is one of the oldest ships in NOAA's fleet. To extend ship service life and ensure safe operations, new capital investments must be made beyond routine annual maintenance cycles. Recent dry dock work and associated material assessments confirm the ship's continuing and rapidly deteriorating condition from advanced age. In FY 2009 *Miller Freeman* lost 60 program science days due in part to 54 casualty breakdowns. The NOAA Ship Recapitalization Plan currently schedules a MRP in FY 2013. However, due to the trend in lost-days-at-sea, an accelerated repair period is necessary in order to safely operate the *Miller Freeman* through FY 2017, its planned decommissioning and 50th anniversary year, a repair period is required in FY 2012.

Without repair periods for these vessels, OMAO risks continued unplanned mechanical or infrastructure failures due to poor structural integrity that will result in lost days at sea and additional casualty reports. The condition of these ships may also jeopardize OMAO's ability to meet the ship certification requirements of the American Bureau of Shipping (ABS), the governing regulatory body for international voyages.

Statement of Need and Economic Benefits

The KA MCA updated in March 2010, details the serious issues related to crane hydraulic systems, mission winch systems, Heating, Ventilation and Air Conditioning (HVAC) ducting and trunk wastage, ballast tank and void deterioration, sea water piping system failures, and various machinery systems that are no longer manufactured and are becoming obsolete. Achieving the 80 percent TAO data availability requirement is dependent on KA's full operational capacity.

The *KA* is the only vessel in the NOAA fleet capable of providing maintenance to the TAO array. NOAA must invest in new capital investments beyond routine annual maintenance cycles to support the operational readiness and to ensure safe operations of the 24 year old vessel. Under the NOAA Ship Recapitalization Plan, the *KA* is currently scheduled for a SLE in FY 2020. The *KA*, however, has begun to experience increased mechanical breakdowns, shipyard delays due to discovered repairs beyond normal maintenance, and critical system failures.

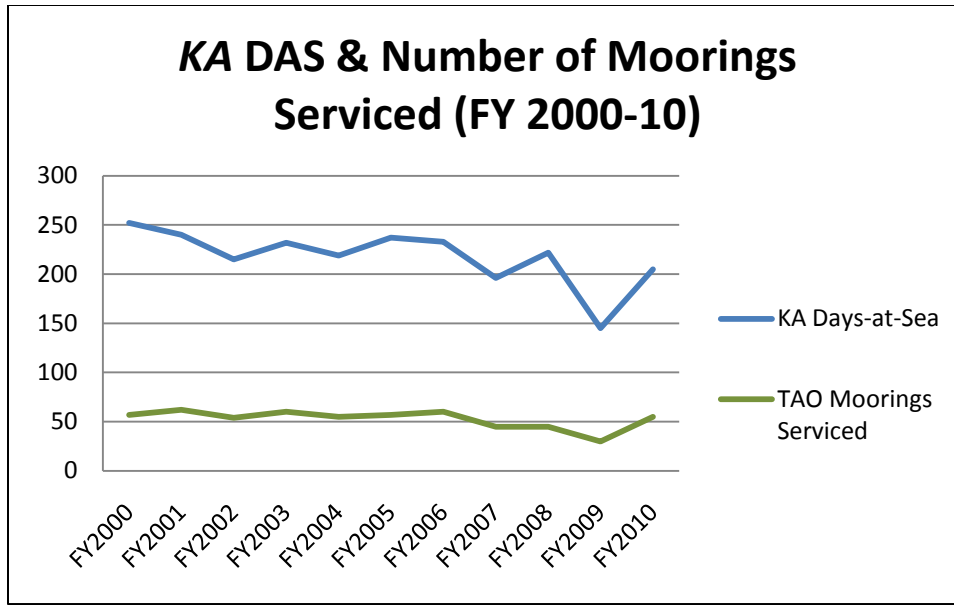
At 44, the *Miller Freeman* is one of NOAA's oldest ships, and suffers from continued and rapid deterioration due to its advanced age. Recent maintenance history shows an increasing incidence of mechanical and electrical casualty reports resulting in unplanned emergency repairs that include extended shipyard periods. It is anticipated that lost program sea days will only increase without a significant investment.

Miller Freeman has lost 60 program science days in FY 2009 due to 54 casualty breakdowns and the cancellation of one winter and two spring program projects. Charter vessels have been used to cover the cancelled cruises. The demand for *Miller Freeman* operating days has increased drastically with the decommissioning of NOAA ship *John N. Cobb* in FY 2008 and the *David Starr Jordan*, reducing the total number of NOAA days-at-sea available for fisheries assessments and research by approximately 400 per year.

The *Miller Freeman* currently supports major field programs, representing decades-long biological and oceanographic time-series in Alaska and off the West Coast. The loss of *Miller Freeman* would severely impact annual investments in important data collections and impede the advancement of NOAA science in the North Pacific. Walleye pollock are the basis of the largest U.S. fishery by landed weight and dollar value. The Alaska Fisheries Science Center (AFSC) conducts annual winter and summer hydroacoustic surveys rotating between the Bering Sea, Gulf of Alaska. The Northwest Fisheries Science Center (NWFSC) conducts a 60-day Pacific hake hydroacoustic survey, and annual Pacific groundfish surveys with the Southwest Fisheries Science Center (SWFSC). All of these surveys are conducted by the *Miller Freeman*.

Historical Performance Data/Days-at-Sea (DAS)

The following graph shows a significant decline in annual DAS for the *KA* during the past two years due to critical mission equipment failures and increased maintenance requirements. During the 10-year period from FY 2000 – FY 2010, the *KA* averaged 218 DAS. During the three-year period from FY2007 – FY 2009, the average DAS declined by 31 to an average of only 188 DAS. The 31 DAS reduction equates to the loss of one full TAO Mooring Cruise. A TAO Mooring Cruise services an average of 14 TAO moorings.



Base Resource Assessment:

The base resources for this activity are described in the Fleet Replacement Program base narrative.

Schedule & Milestones:

- FY 2012 - Develop Statement of Work and Detailed Drawing for Acquisition of Repairs (Q1)
- FY 2012 - Publish Solicitations (Q2)
- FY 2012 - Award Contracts (Q4)
- FY 2013 - Begin Industrial Work and TAO buoy maintenance with Charter (Q2)
- FY 2013 - Complete Industrial Work and return to Service (Q2)

Performance Goals and Measurement Data

Performance Measure:	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16
Annual Number of Fleet Casualty Report (CASREPS)	Target	Target	Target	Target	Target	Target
With increase	210	150	115	75	25	5
Without increase	210	220	230	240	250	260
Performance Measure:	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16
KA Operational Days at Sea (Fleet Only)	Target	Target	Target	Target	Target	Target
With increase	3,198	3,146	3,078	3,068	3,048	3,028
Without increase	2,963	2,938	2,905	2,880	2,855	2,847
Performance Measure:	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16
MF Operational Days at Sea (Fleet Only)	Target	Target	Target	Target	Target	Target
With increase	3,198	3,179	3,160	3,141	3,122	3,103
Without increase	2,963	2,924	2,905	2,886	2,867	2,848

Outyear Funding Estimate (BA in thousands)

Repair Periods; KA and MF	FY11 & Prior	FY 12	FY13	FY14	FY15	FY16	CTC	Total
Change from FY 2012 Base	0	11,626						
Total	1,000	12,626	TBD	TBD	TBD	TBD	TBD	TBD

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Fleet Replacement
Subactivity: New Vessel Construction

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	4,226
25.2 Other services	7,400
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	11,626

New Vessel Construction (FSV6) : (Base Funding: 5 FTE and \$0 million; Program Change: 0 FTE and \$1,400,000): NOAA requests 0 FTE and \$1,400,000 for a total of 5 FTE and \$1,400,000 to provide project management and change margin funds for Fisheries Survey Vessel (FSV 6). A total of \$79,843,000 was provided in the FY 2009 American Recovery and Reinvestment Act. The requested FY 2012 funding will be used as follows:

\$1,100,000	Project Management
<u>300,000</u>	Change Orders
\$1,400,000	Total

Proposed Actions

OMAO will continue construction of a fisheries research ship to replace the NOAA ship *David Starr Jordan*. In FY 2012, the increase in funding will allow OMAO to procure the civilian expertise required to monitor and evaluate the contractor's progress. The government Construction Representative will review contractor deliverables and conduct on-site technical meetings to advise the FSV6 program manager of any problems/issues/corrective actions. The representative will develop shipbuilding metrics and activities to meet specification and contract requirements. OMAO also will procure engineering changes as necessary during the construction and testing of the vessel. These technical changes must be reviewed and fully assessed for cost and impact prior to government approval according to the project office's configuration control plan.

Statement of Need and Economic Benefits

The Fleet Recapitalization Plan provides for the replacement of *David Star Jordan*. The FSV6 is needed to perform acoustic surveys with complementary capabilities for direct sampling of fish and zooplankton and to launch and recover a work boat in open seas. The ship surveys need to comply with international standards on acoustic survey criteria to improve data collection, so the new ship must carry advanced acoustic detection systems and other mission unique equipment.

NOAA requires data collected at sea to achieve outcomes mandated by Congress and the economic impact is significant. The Magnuson-Stevens Fisheries Conservation and Management Reauthorization Act require sufficient data to establish annual catch limits for fisheries. If sufficient data is not available, catch limits must be reduced from current levels with an estimated negative impact on the commercial fishing industry of up to \$7 billion annually. The requested funding is necessary to effectively manage the construction and bring FSV6 into operations.

Base Resource Assessment:

The base resources for this activity are described in the Fleet Replacement base narrative.

Schedule & Milestones:

- FY 2012: Execute contract
- FY 2013: FSV6 Delivery
- FY 2014: FSV6 Operations

Deliverables:

Engineering change orders will provide material and manpower to incorporate a required ship component into the vessel. Staff will provide analysis and evaluation reports on ship progress to program managers.

Performance Goals

Performance Measure: Percentage of Living Marine Resources (LMR) with Adequate Population Assessments and Forecasts, supports Measure 17b, 17c*	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	
	Without Increase (DSJ has been retired)	-0.90%	-1.80%	-2.70%	-3.60%	-4.50%
	With Increase (New FSV 6)	NA	NA	NA	19.10%	19.10%

*From NOAA Ship Recapitalization Plan (October 2007), Chapter 11, Figure 9, Cumulative Year-over-Year Change Projected from FY07 GPRA Performance Baseline. The change in GPRA target reflects the impact of this increase in bringing FSV6 online relative to providing no capability to replace *David Starr Jordan*.

Outyear Funding Estimate (BA in thousands)

	FY 2011 and prior	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	Estimate to Complete	Total Program Estimate
New Vessel Construction (FSV 6)								
Change from FY2012 Base	0	1,400						
Total Request	79,843	1,400	TBD	TBD	TBD	TBD	TBD	TBD

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Fleet Replacement
Subactivity: New Vessel Construction

Object Class	2012 Increase
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	50
22 Transportation of things	1
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	7
24 Printing and reproduction	0
25.1 Advisory and assistance services	26
25.2 Other services	1,002
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	4
31 Equipment	310
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	1,400

Temporary Berthing (Base Funding: 0 FTE and \$1,000,000; Program Change: 0 FTE and - \$1,000,000): NOAA requests a decrease of \$1,000,000 for a total of \$0 and 0 FTE for temporary berthing for *Henry B. Bigelow* (FSV2). Actual costs to berth the *Bigelow* are substantially lower and will be accommodated within the Marine Operations and Maintenance – Marine Services activity in the ORF account.

Outyear Funding Estimate (BA in thousands)

	FY2011 & Prior	FY2012	FY2013	FY2014	FY2015	FY2016	Estimate to Complete	Total Program Estimate
Temporary Berthing								
Change from FY 2012 Base		(1,000)						
Total Request	4,976	0	TBD	TBD	TBD	TBD	TBD	TBD

PROGRAM CHANGE DETAIL BY OBJECT CLASS
(Dollar amounts in thousands)

Activity: Fleet Replacement
 Subactivity: Temporary Berthing

Object Class	2012 Decrease
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	-1,000
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	-1,000

Appropriation: NOAA Corps Retirement Pay (Mandatory)
Subactivity: NOAA Corps Retirement Pay (Mandatory)

The retirement system for the uniformed services provides a measure of financial security after release from active duty for service members and their survivors. It is an important factor in the choice of a career in the uniformed services, and the legal mandate for rates to be paid is the same for all uniformed services, see 10 USC. Retired pay is an entitlement to NOAA Commissioned Corps officers under 33 USCA 3044, 33 USCA 3045, and 33 USCA 3046. Retired pay funds are transferred to the U.S. Coast Guard, which handles the payments each year as adjusted pursuant to the Department of Defense Authorization legislation. Healthcare funds for non-Medicare-eligible retirees, dependents, and annuitants are administered by OMAO.

Legal authority for retirement of NOAA Commissioned Corps officers is contained in 33 USCA 3044. Retired officers of the NOAA Commissioned Corps receive retirement benefits that are administered by the Commissioned Personnel Center within the Office of Marine and Aviation Operations.

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Department of Commerce
 National Oceanic and Atmospheric Administration
 NOAA Corps Retirement Pay (Mandatory)
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2011 Currently Available	0	0	28,269	28,269
plus: 2012 Adjustments to Base	0	0	0	0
FY 2012 Base	0	0	28,269	28,269
plus: 2012 Program Changes	0	0	0	0
FY 2012 Estimate	0	0	28,269	28,269

Comparison by activity/subactivity		FY 2010		FY 2011		FY 2012		FY 2012		Increase/Decrease	
		Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Medicare Eligible Retiree	Pos/BA	0	26,116	0	28,269	0	28,269	0	28,269	0	0
Health Fund Contribution - NOAA Corps	FTE/OBL	0	23,293	0	28,269	0	28,269	0	28,269	0	0
Total: Medicare Eligible Retiree Health Fund	Pos/BA	0	26,116	0	28,269	0	28,269	0	28,269	0	0
	FTE/OBL	0	23,293	0	28,269	0	28,269	0	28,269	0	0

Department of Commerce
National Oceanic and Atmospheric Administration
NOAA Corps Retirement Pay (Mandatory)
SUMMARY OF RESOURCE REQUIREMENTS
(Dollar amounts in thousands)

	FY 2010 Actuals		FY 2011 Currently Available		FY 2012 Base Program		FY 2012 Estimate		Increase/ Decrease	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	0	23,293	0	28,269	0	28,269	0	28,269	0	0
Total Obligations	0	23,293	0	28,269	0	28,269	0	28,269	0	0
Adjustments to Obligations:										
Unobligated balance expires	0	2,823	0	0	0	0	0	0	0	0
Total Budget Authority	0	26,116	0	28,269	0	28,269	0	28,269	0	0
Financing from Transfers and Other:										
Net Appropriation	0	26,116	0	28,269	0	28,269	0	28,269	0	0

Appropriation: Medicare-Eligible Retiree Healthcare Fund Contribution - NOAA Corps
Subactivity: Medicare-Eligible Retiree Healthcare Fund Contribution - NOAA Corps

The FY 2003 Department of Defense Authorization Act requires all uniformed services, including NOAA, to participate in an accrual fund for Medicare-eligible retirees. Payments into this accrual fund will cover the future health care benefits of present, active-duty NOAA officers and their dependents and annuitants.

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Department of Commerce
 National Oceanic and Atmospheric Administration
 Medicare Eligible Retiree Health Fund Contribution - NOAA Corps
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2011 Currently Available	0	0	1,822	1,822
plus: 2012 Adjustments to Base	0	0	114	114
FY 2012 Base	0	0	1,936	1,936
plus: 2012 Program Changes	0	0	0	0
FY 2012 Estimate	0	0	1,936	1,936

Comparison by activity/subactivity		FY 2010		FY 2011		FY 2012		FY 2012		Increase/ Decrease	
		Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Medicare Eligible	Pos/BA	0	1,822	0	1,822	0	1,936	0	1,936	0	0
Retiree Health Fund Contribution - NOAA	FTE/OBL	0	1,822	0	1,822	0	1,936	0	1,936	0	0
Total: Medicare Eligible	Pos/BA	0	1,822	0	1,822	0	1,936	0	1,936	0	0
Retiree Health Fund	FTE/OBL	0	1,822	0	1,822	0	1,936	0	1,936	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Medicare Eligible Retiree Health Fund Contribution - NOAA Corps
SUMMARY OF RESOURCE REQUIREMENTS
 (Dollar amounts in thousands)

	FY 2010 Actuals		FY 2011 Currently Available		FY 2012 Base Program		FY 2012 Estimate		Increase/ Decrease	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	0	1,822	0	1,822	0	1,936	0	1,936	0	0
Total Obligations	0	1,822	0	1,822	0	1,936	0	1,936	0	0
Adjustments to Obligations:										
Total Budget Authority	0	1,822	0	1,822	0	1,936	0	1,936	0	0
Financing from Transfers and Other:										
Net Appropriation	0	1,822	0	1,822	0	1,936	0	1,936	0	0

Department of Commerce
 National Oceanic and Atmospheric Administration
 Medicare Eligible Retiree Health Fund Contribution - NOAA Corps
SUMMARY OF REQUIREMENTS BY OBJECT CLASS
 (Dollar amounts in thousands)

	2010	2011	2012	2012	Increase/ (Decrease)
Object Class	<u>Actuals</u>	<u>Currently Available</u>	<u>Base</u>	<u>Estimate</u>	<u>over 2012 Base</u>
Other purchases of goods and services from Gov't accounts	1,822	1,822	1,936	1,936	0
Total Obligations	1,822	1,822	1,936	1,936	0
Less prior year recoveries	0	0	0	0	0
Less unobligated balance, SOY	0	0	0	0	0
Plus unobligated balance, EOY	0	0	0	0	0
Offsetting collections, Mandatory	0	0	0	0	0
Less: Previously Unavail. Unoblig. Bal.	0	0	0	0	0
Total Budget Authority Mandatory	1,822	1,822	1,936	1,936	0
 Personnel Data					
Full-Time equivalent Employment:					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Total	0	0	0	0	0
Authorized Positions:					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Total	0	0	0	0	0

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