# NATIONAL INSTITUTE
# OF STANDARDS AND TECHNOLOGY

# NATIONAL TECHNICAL INFORMATION SERVICE

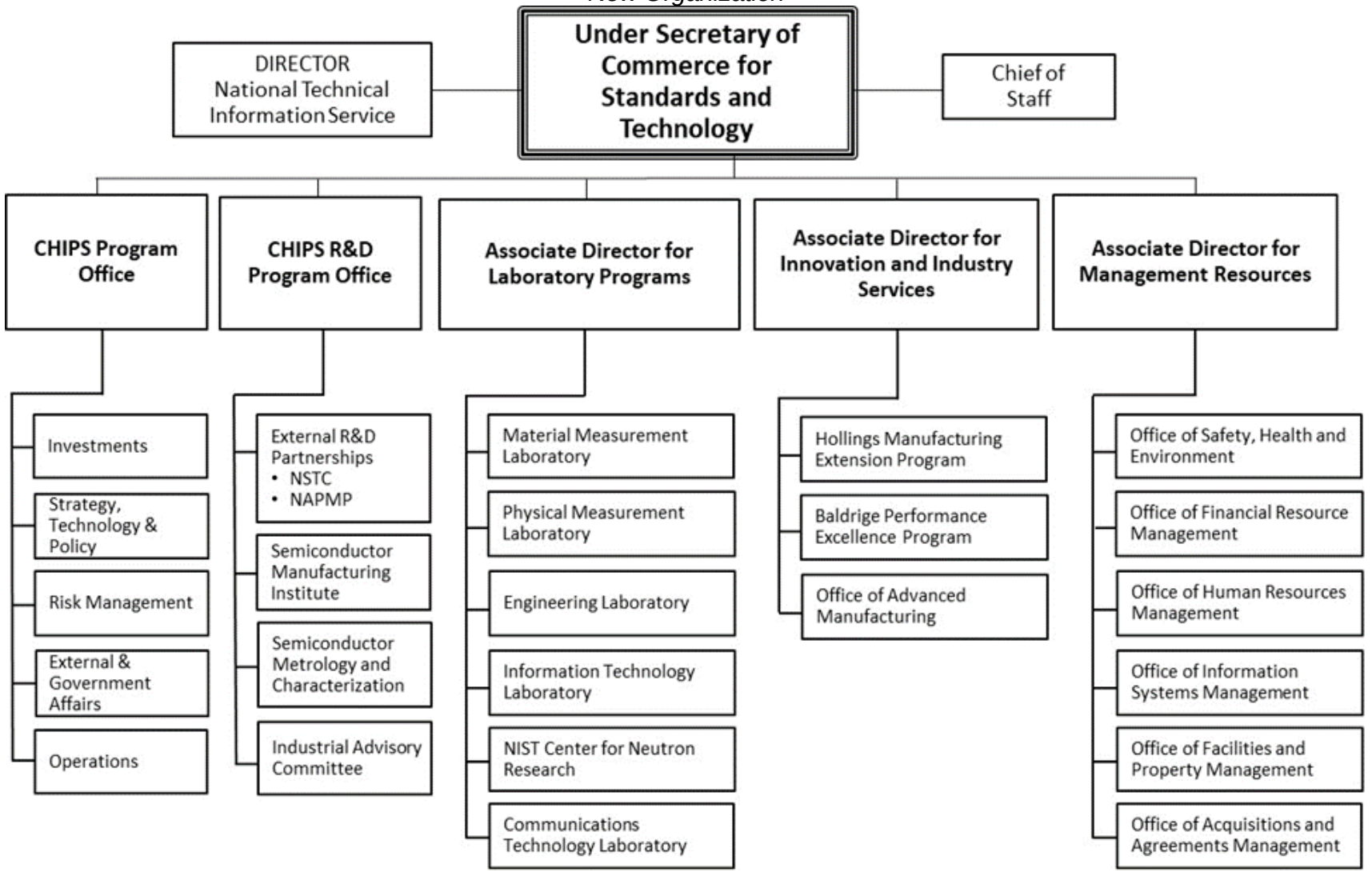
# FISCAL YEAR 2024

# BUDGET SUBMISSION TO CONGRESS

**DEPARTMENT OF COMMERCE**
**NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY**
**Budget Estimates, Fiscal Year 2023**
**Congressional Submission**

Table of Contents

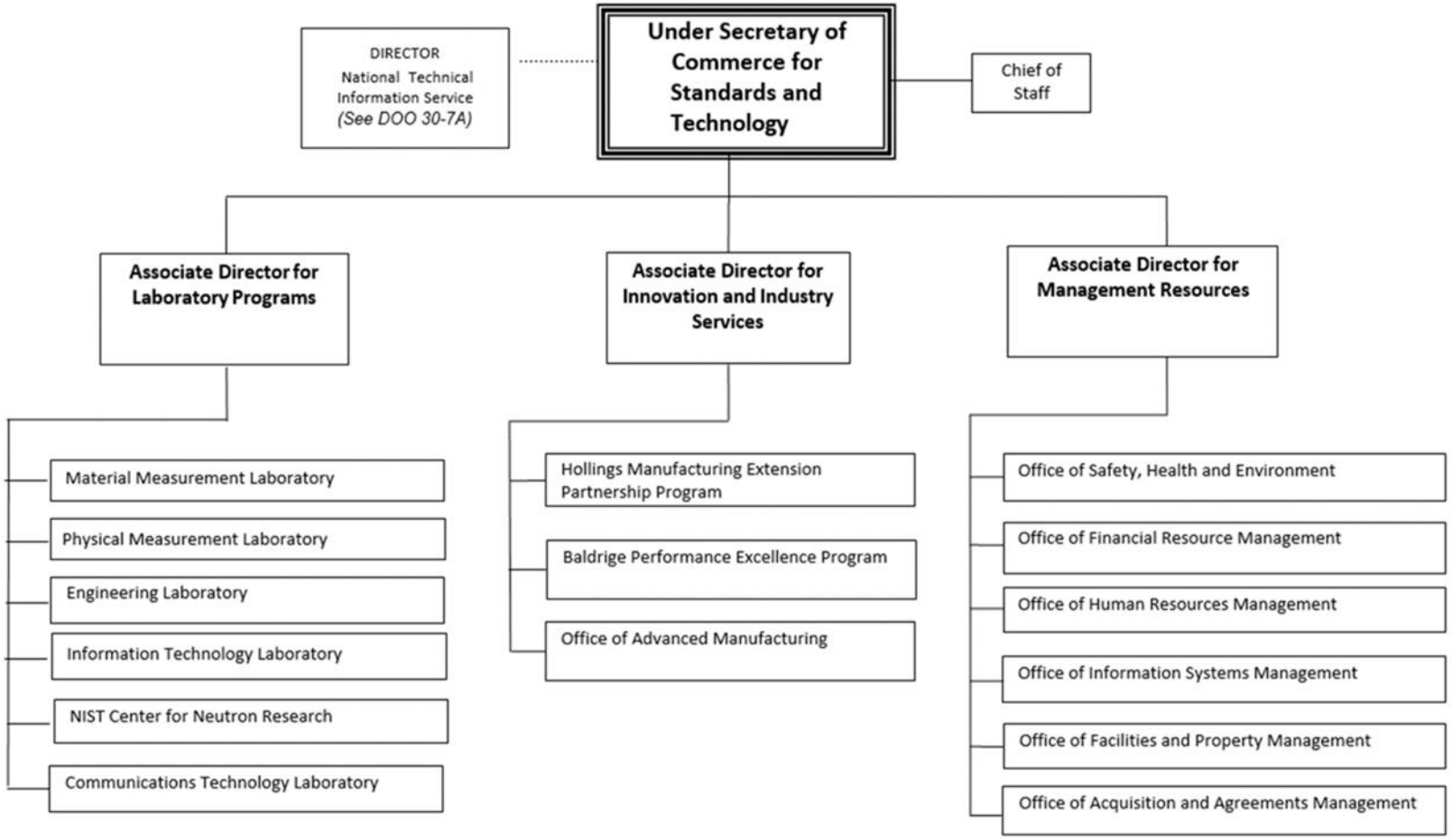
# U.S. DEPARTMENT OF COMMERCE
## National Institute of Standards and Technology
*New Organization*




The Department of Commerce notified Congress of the organizational change on February 13, 2023, and will be implemented in accordance with the FY 2021 NDAA (P.L. 116-283), and the CHIPS Act of 2022 (P.L. 117-167).

Exhibit 2

# U.S. DEPARTMENT OF COMMERCE
## National Institute of Standards and Technology
*Previous Organization*



**Department of Commerce**
**National Institute of Standards and Technology**
**Budget Estimates, Fiscal Year 2024**

Executive Summary

The total FY 2024 discretionary budget request is $1,631.968 million, an increase of $4.683 million from the FY 2023 Enacted level. The FY 2024 discretionary request for NIST is summarized below by appropriation account.

1. Scientific and Technical Research and Services (STRS):

| | |
|---|---|
| **FY 2023 Enacted Funding ($ in thousands)*** | **$953,000** |
| **Inflationary Adjustments** | **35,754** |
| **Removal of One-time Congressional External Community Projects** | **-62,532** |
| **STRS Program Increases Total** | **68,726** |
| *Advancing Research in Critical and Emerging Technologies* | *20,000* |
| *Cybersecurity and Privacy* | *20,000* |
| *Trustworthy and Resilient Domestic Supply Chains* | *8,000* |
| *Climate Change and Environmental Sustainability* | *5,489* |
| *Measurement Services Modernization* | *5,000* |
| *National Construction Safety Team Act Implementation* | *5,000* |
| *NIST Center for Neutron Research (NCNR) Advanced Research Instrumentation* | *3,000* |
| *NIST Diversity, Equity, Inclusion and Accessibility (DEIA) Initiatives* | *2,237* |
| **Total STRS FY 2024 Request** | **$994,948** |

2. Industrial Technology Services (ITS):

| | |
|---|---|
| **FY 2023 Enacted Funding ($ in thousands)*** | **$212,000** |
| **Inflationary Adjustments** | **1,698** |
| **Manufacturing Extension Partnership (MEP) Program Increase** | **100,858** |
| **Manufacturing USA (Mfg. USA) Program Increase** | **60,316** |
| **Total ITS FY 2024 Request** | **$374,872** |

3. Construction of Research Facilities (CRF):

| | |
|---|---|
| **FY 2023 Enacted Funding ($ in thousands)** | **$462,285** |
| **Inflationary Adjustments** | **3,539** |
| **Removal of One-time Congressional External Community Projects** | **-332,285** |
| **Gaithersburg Central Utility Plant Modernization** | **50,000** |
| **Multiple HVAC System Replacements** | **30,000** |
| **Safety, Capacity, Maintenance, and Major Repairs** | **48,609** |
| **Total CRF FY 2024 Request** | **$262,148** |

*Note: FY 2023 Enacted amounts for STRS and ITS do not include amounts from the Disaster Relief Supplemental Appropriations Act, 2023

**Performance:**

For current GPRA targets please see the FY 2022/2020 Annual Performance Plan and Report.

**Adjustments:**

*Inflationary Adjustments*

NIST's base includes a total of $40.991 million to account for the full funding requirement for inflationary adjustments to current programs for NIST's activities. This includes inflationary increases for labor and non-labor activities.

**Department of Commerce**
**National Institute of Standards and Technology**
**FY 2024 PROGRAM INCREASES / DECREASES / TERMINATIONS**
(Dollar amounts in thousands)
(By Appropriation, Largest to Smallest)

## Increases

| Page No In CJ | Appropriations | Budget Program | Title of Increase | Positions | Budget Authority |
|---|---|---|---|---|---|
| NIST-103 | Industrial Technology Services | Hollings Manufacturing Extension Partnership | Hollings Manufacturing Extension Partnership Program | 6 | $100,858 |
| NIST-110 | Industrial Technology Services | Manufacturing USA | Fund Essential Support for Manufacturing USA Institutes | 12 | 60,316 |
| NIST-137 | Construction of Research Facilities | Safety, Capacity, Maintenance and Major Repairs | Gaithersburg Central Utility Plant Modernization | 0 | 50,000 |
| NIST-139 | Construction of Research Facilities | Safety, Capacity, Maintenance and Major Repairs | Safety, Capacity, Maintenance and Major Repairs | 0 | 48,609 |
| NIST-141 | Construction of Research Facilities | Safety, Capacity, Maintenance and Major Repairs | Multiple HVAC System Replacements | 0 | 30,000 |
| NIST-28 | Scientific and Technical Research and Services | Laboratory Programs | Advancing Research in Critical and Emerging Technologies | 43 | 20,000 |
| NIST-34 | Scientific and Technical Research and Services | Laboratory Programs | Cybersecurity and Privacy | 25 | 20,000 |
| NIST-39 | Scientific and Technical Research and Services | Laboratory Programs | Trustworthy and Resilient Domestic Supply Chains | 18 | 8,000 |
| NIST-44 | Scientific and Technical Research and Services | Laboratory Programs | Measurement Services Modernization | 14 | 5,000 |
| NIST-49 | Scientific and Technical Research and Services | Laboratory Programs | National Construction Safety Team Act Implementation | 5 | 5,000 |
| NIST-78 | Scientific and Technical Research and Services | Standards Coordination and Special Programs | Climate Change and Environmental Sustainability | 5 | $3,489 |

| | | | | | |
|---|---|---|---|---|---|
| NIST-53 | Scientific and Technical Research and Services | Laboratory Programs | NIST Center for Neutron Research (NCNR) Advanced Research Instrumentation | 7 | 3,000 |
| NIST-57 | Scientific and Technical Research and Services | Standards Coordination and Special Programs | NIST Diversity, Equity, Inclusion and Accessibility (DEIA) Initiatives | 3 | 2,237 |
| NIST-61 | Scientific and Technical Research and Services | Laboratory Programs | Climate Change and Environmental Sustainability | 3 | 2,000 |
| | Total, Increases | | | 141 | 358,509 |

## Decreases

| Page No In CJ | Appropriations | Budget Program | Title of Decrease | Positions | Budget Authority |
|---|---|---|---|---|---|
| NIST-143 | Construction of Research Facilities | Construction and major Renovations | Removal of One-time Congressional External Projects | -4 | (332,285) |
| NIST-81 | Scientific and Technical Research and Services | Standards Coordination and Special Programs | Removal of One-time Congressional External Projects | 0 | ($62,532) |
| | Total, Decreases | | | -4 | (394,817) |

## Terminations

| | Appropriations | Budget Program | Title of Termination | Positions | Budget Authority |
|---|---|---|---|---|---|
| N/A | | | | | |
| | Total, Terminations | | | | |

**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**SUMMARY OF RESOURCE REQUIREMENTS**
(Dollar amounts in thousands)

| | Positions | FTE | Budget Authority | Direct Obligations | Appro-priation |
|---|---|---|---|---|---|
| Enacted, 2023 | 2,808 | 2,661 | $994,500 | $1,068,305 | $993,000 |
| Less: Unobligated balance from prior year | 0 | 0 | | (73,805) | 0 |
| Less: Disaster Relief Supplemental | | | (40,000) | (40,000) | (40,000) |
| Less: Transfer from DoJ | 0 | 0 | (1,500) | (1,500) | 0 |
| 2024 Adjustments to Base | | | | | |
| Annualization of positions financed in FY 2023 | 0 | 25 | 0 | 0 | 0 |
| Plus: Inflationary adjustments to base | 0 | 0 | 35,754 | 35,754 | 35,754 |
| 2024 Base | 2,808 | 2,686 | 988,754 | 988,754 | 988,754 |
| Plus: 2024 Program changes | 123 | 91 | 6,194 | 6,194 | 6,194 |
| Plus: Transfer from DoJ | 0 | 0 | 1,500 | 1,500 | 0 |
| 2024 Estimate | 2,931 | 2,777 | 996,448 | 996,448 | 994,948 |

| | | 2022 Actual | | 2023 Enacted | | 2024 Base | | 2024 Estimate | | Increase/Decrease over 2024 Base | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Comparison by activity/subactivity with totals by activity** | | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Measurement Science, Services, and Programs | | | | | | | | | | | |
| Laboratory Programs | Pos./Approp | 2,422 | $727,767 [1/] | 2,534 | $803,333 [2/] | 2,534 | $794,486 | 2,652 | $859,723 | 118 | $65,237 |
| | FTE/Obl. | 2,164 | 695,168 [1/] | 2,404 | 860,971 [2/] | 2,423 | 794,486 | 2,510 | 859,723 | 87 | 65,237 |
| Corporate Services | Pos./Approp | 30 | 17,460 | 30 | 17,460 | 30 | 19,053 | 30 | 19,053 | 0 | 0 |
| | FTE/Obl. | 27 | 17,457 | 29 | 17,497 | 29 | 19,053 | 29 | 19,053 | 0 | 0 |
| Standards Coordination and Special Programs | Pos./Approp | 217 | 126,773 | 244 | 172,207 | 244 | 175,215 | 249 | 116,172 | 5 | (59,043) |
| | FTE/Obl. | 193 | 120,477 | 228 | 189,837 | 234 | 175,215 | 238 | 117,672 | 4 | (57,543) |
| TOTALS | Pos./Approp | 2,669 | 872,000 [1/] | 2,808 | 993,000 [2/] | 2,808 | 988,754 | 2,931 | 994,948 | 123 | 6,194 |
| | FTE/Obl. | 2,384 | 833,102 [1/] | 2,661 | 1,068,305 [2/] | 2,686 | 988,754 | 2,777 | 996,448 | 91 | 7,694 |

| | 2022 Actual | | 2023 Enacted | | 2024 Base | | 2024 Estimate | | Increase/Decrease over 2024 Base | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Adjustments for: | | | | | | | | | | |
| Recoveries | | ($6,974) | | 0 | | 0 | | 0 | | 0 |
| Refunds | | (219) | | 0 | | 0 | | 0 | | 0 |
| Unobligated balance, start of year | | (26,214) | | (73,805) | | 0 | | 0 | | 0 |
| Unobligated balance, end of year | | 73,805 | | 0 | | 0 | | 0 | | 0 |
| Budget Authority | | 873,500 | | $994,500 | | $988,754 | | $996,448 | | $7,694 |
| Financing from transfers: | | | | | | | | | | |
| Transfers from DoJ for OLES (-) | | (1,500) | | (1,500) | | 0 | | (1,500) | | (1,500) |
| Transfers to other accounts (+) | | 0 | | 0 | | 0 | | 0 | | 0 |
| Appropriation | | 872,000 [1/] | | 993,000 [2/] | | 988,754 | | 994,948 | | 6,194 |

[1/] Including enacted FY 2022 $22M and part of its obligation for Surfside building investigation from Disaster Relief Supplemental Appropriations Act.

[2/] Including enacted FY 2023 $40M from the Disaster Relief Supplemental Appropriations Act, 2023.

**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**SUMMARY OF FINANCING**
(Dollar amounts in thousands)

| | 2022 Actual | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|
| Total Obligations | $833,102 [1/] | $1,068,305 [1/] | $988,754 | $996,448 | $7,694 |
| Offsetting collections from: | | | | | |
| Federal funds | 0 | 0 | 0 | 0 | 0 |
| Non-Federal sources | 0 | 0 | 0 | 0 | 0 |
| Total offsetting collections | 0 | 0 | 0 | 0 | 0 |
| Adjustments for: | | | | | |
| Recoveries and refunds | (7,193) | 0 | 0 | 0 | 0 |
| Unobligated balance, start of year | (26,214) | (73,805) | 0 | 0 | 0 |
| Unobligated balance, end of year | 73,805 | 0 | 0 | 0 | 0 |
| Unobligated balance, expired | 0 | 0 | 0 | 0 | 0 |
| Budget Authority | 873,500 | 994,500 | 988,754 | 996,448 | 7,694 |
| Financing: | | | | | |
| Transfers from other accounts (-) | (1,500) [2/] | (1,500) [2/] | 0 | (1,500) [2/] | (1,500) |
| Transfer to other accounts (+) | 0 | 0 | 0 | 0 | 0 |
| Appropriation | 872,000 [1/] | 993,000 [1/] | 988,754 | 994,948 | 6,194 |

[1/] Including enacted FY 2022 $22M for Surfside building investigation from Disaster Relief Supplemental Appropriations Act and enacted FY 2023 $40M from the Disaster Relief Supplemental Appropriations Act, 2023.

[2/] Transfers of $1,5M from DOJ for NIST Office of Law Enforcement Standards (OLES).

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**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**ADJUSTMENTS TO BASE**
(Dollar amounts in thousands)

| | Perm. Pos. | FTE | Amount |
|---|---|---|---|
| **Transfer** | ... | ... | 0 |
| **Adjustments** | ... | ... | 0 |
| **Financing** | ... | ... | 0 |
| | | | |
| **Other Changes:** | | | |
| FY 2023 pay raise | ... | ... | $4,953 |
| FY 2024 pay raise | ... | ... | 18,064 |
| Change in compensable days | ... | ... | 1,655 |
| Annualization of positions financed in FY 2023 | 0 | 25 | |
| Awards | ... | ... | 538 |
| Personnel benefits: | | | |
| Civil Service Retirement System (CSRS) | ... | ... | (24) |
| Federal Employees' Retirement System (FERS) | ... | ... | (524) |
| Thrift Savings Plan (TSP) | ... | ... | (53) |
| Federal Insurance Contribution Act (FICA) | ... | ... | (300) |
| Health insurance | ... | ... | 738 |
| Employees' Compensation Fund | ... | ... | 14 |
| Travel and transportation of persons: | | | |
| Mileage | ... | ... | 5 |
| Per Diem | ... | ... | 88 |
| Rental Payments to GSA | ... | ... | 383 |
| GSA Furniture and IT Program (FIT) | | | (24) |
| Communications, utilities, and miscellaneous charges: | | | |
| Postage | ... | ... | 1 |
| HCHB Electricity | ... | ... | 0 |
| HCHB Water/Sewer | ... | ... | 0 |
| Electricity rate | ... | ... | 1,041 |
| Natural gas rate | ... | ... | 965 |
| Other services: | | | |
| Working Capital Fund Departmental Management | ... | ... | 4,577 |
| Cybersecurity (Non-Add in WCF) | | | (68) |
| Commerce Business Systems (CBS) | ... | ... | 1,221 |
| Commerce Enterprise Services | ... | ... | 0 |
| Commerce Enterprise Infrastructure | ... | ... | (2,978) |
| NARA storage costs | ... | ... | (2) |
| General pricing level adjustment | ... | ... | 5,416 |
| Subtotal, Other Changes | 0 | 25 | 35,754 |
| | | | |
| Total, Adjustments to base | 0 | 25 | 35,754 |

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**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS**
(Dollar amounts in thousands)

Activity: Measurement Science, Services, and Programs
Subactivity: Laboratory Programs

| Line Item | | 2022 Actual | | 2023 Enacted | | 2024 Base | | 2024 Estimate | | Increase/Decrease over 2024 Base | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Strategic and Emerging | Pos./Approp | 31 | $13,776 | 44 | $19,389 | 44 | $19,916 | 44 | $19,916 | 0 | 0 |
| Research Initiative Fund | FTE/Obl. | 27 | 10,967 | 39 | 23,640 | 41 | 19,916 | 41 | 19,916 | 0 | 0 |
| National Measurement and | Pos./Approp | 2,100 | 641,042 [1/] | 2,189 | 701,619 [2/] | 2,189 | 688,673 | 2,297 | 748,673 | 108 | $60,000 |
| Standards Laboratories | FTE/Obl. | 1,876 | 617,608 [1/] | 2,078 | 741,333 [2/] | 2,092 | 688,673 | 2,172 | 748,673 | 80 | 60,000 |
| User Facilities | Pos./Approp | 208 | 59,307 | 216 | 66,286 | 216 | 68,817 | 223 | 71,817 | 7 | 3,000 |
| | FTE/Obl. | 187 | 55,252 | 207 | 73,942 | 209 | 68,817 | 214 | 71,817 | 5 | 3,000 |
| Postdoctoral Research | Pos./Approp | 83 | 13,642 | 85 | 16,039 | 85 | 17,080 | 88 | 19,317 | 3 | 2,237 |
| Associateship Program | FTE/Obl. | 74 | 11,341 | 80 | 22,056 | 81 | 17,080 | 83 | 19,317 | 2 | 2,237 |
| **Total** | Pos./Approp | 2,422 | 727,767 [1/] | 2,534 | 803,333 [2/] | 2,534 | 794,486 | 2,652 | 859,723 | 118 | 65,237 |
| | FTE/Obl. | 2,164 | 695,168 [1/] | 2,404 | 860,971 [2/] | 2,423 | 794,486 | 2,510 | 859,723 | 87 | 65,237 |

[1/] Including enacted FY 2022 $22M for Surfside building investigation from Disaster Relief Supplemental Appropriations Act.
[2/] Including enacted FY 2023 $40M from the Disaster Relief Supplemental Appropriations Act, 2023.

**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**JUSTIFICATION OF PROGRAM AND PERFORMANCE**
(Dollar amounts in thousands)

Activity: Measurement Science, Services, and Programs
Subactivity: Laboratory Programs

## Goal Statement

The goal of the NIST laboratory programs is to deliver world-class measurement science, standards, and technology to our stakeholders in industry, academia, and government to drive technological innovation that strengthens the economic and industrial competitiveness of the United States and improves our quality of life.

## Base Program

The NIST laboratory programs work at the frontiers of measurement science, ensuring the U.S. system of measurements is firmly grounded on sound scientific and technical principles. The NIST laboratories address increasingly complex measurement challenges, ranging from the very small (quantum devices) to the very large (vehicles and buildings), and from the physical (resilient infrastructure) to the virtual (cybersecurity). As new technologies develop and evolve, NIST's measurement research and services remain central to innovation, productivity, trade, national security, and public safety.

The NIST laboratory programs provide industry, academia, and other Federal agencies with:

- World-class research capabilities in measurement science, forming the foundation of our global system of weights and measures and enable innovation;
- Basic and applied measurements, calibrations, and standards impacting every aspect of our economy and lives from the accuracy of airplane altimeters to the reliability of clinical measurements, to the strength of the encryption technologies that protect our digital lives and businesses;
- Unbiased technical support for the development of industry-led, open, consensus-based documentary standards and specifications driving the deployment of advanced technology solutions and facilitate global commerce; and
- Unique, cutting-edge user facilities helping over 3,000 scientists from academia and industry move the state of the art forward in advanced materials, nanotechnology, bioscience, and other emerging technology areas.
-

NIST's mission is essential for U.S. commerce and global competitiveness. The Nation's founders knew the importance of weights and measures, that standards and technology are fundamental to effective commerce and trade, representing a critically important role of the Federal Government. Article 1 Section 8 of the Constitution gives the government the power to "fix the Standard of Weight and Measures," and Congress established the National Bureau of Standards (renamed NIST in 1988) to fill this role. This makes NIST a National Metrology Institute, responsible for the dissemination of the fundamental units of measurement, the basis of international trade and commerce, and enabling scientific progress. NIST is the best in the world at performing its metrology mission. Other nations of the world are now seeking to gain an advantage over U.S. leadership in standards, technology, and trade by making substantial investments in the work and facilities of their own National Metrology Institutes, such as those in China and Germany.

A clear example of the fundamental and infrastructural nature of NIST's mission space is NIST's work in the dissemination of the time and frequency standards. The dissemination of the time standard, traceable to NIST's atomic clock in Boulder, CO, underpins a tremendous amount of activity in our modern commercial system. For example, NIST official time is used to time-stamp hundreds of billions of dollars in U.S. financial transactions each working day. NIST time is also disseminated to industry and the public through the Internet Time Service which receives about 40 billion automated requests per day to synchronize clocks in computers and network devices. Additionally, other technological breakthroughs that we now take for granted are dependent upon the accuracy and precision of NIST's atomic clocks. This includes cellular telephones, Global Positioning System (GPS) satellite receivers, and the electric power grid.

Furthermore, the investment in the measurement science mission of NIST has proven to have a significant economic influence with a series of economic impact studies showing the average investment in NIST research has a direct benefit to cost ratio of 47:1.[1] That is, for every tax dollar invested in NIST, $47 of value is created in the economy annually.

There is no other private sector, or government entity with the capability, capacity, or mission to provide the types of services as those provided by NIST.

**Examples of Accomplishments**

Recent highlights of accomplishments from the laboratory programs include:

Cybersecurity and Privacy: NIST has delivered on its many responsibilities under the President's Executive Order on Improving the Nation's Cybersecurity (14028) to help enhance software supply chain security, engaging with stakeholders through multiple workshops and calls for papers. NIST released software supply chain security and integrity resources, including an updated Secure Software Development Framework, labeling criteria for consumer software and internet of things (IoT) device security, and updated supply chain security risk management guidance. Announced at a White House Cybersecurity Summit, NIST launched its National Initiative to Improve Cybersecurity in Supply Chains (NIICS), focused on the development and management of hardware and services throughout the supply chain. In February 2022, NIST initiated a request for information (RFI) on the NIICS and its widely-used NIST Cybersecurity Framework to address the changing

[1] Summary of NIST Laboratory Economic Impact Studies: https://www.nist.gov/director/summary-nist-laboratory-economic-impact-studies

cybersecurity risk landscape. Based on inputs from the community, NIST kicked off the process to update the Cybersecurity Framework to version 2.0 (CSF 2.0). In January 2023, NIST posted an NSF 2.0 Concept Paper outlining potential significant updates and hosted two workshops in February 2023 for stakeholders to provide additional input. At the National Cybersecurity Center of Excellence (NCCoE), NIST has developed practical cybersecurity guides in collaboration with industry in 5G, distributed energy resources, and held multiple public workshops on cybersecurity for genomic data.

*Privacy Workforce Public Working Group* has brought practitioners together to address the need for skilled privacy professionals to develop workforce resources aligned with the NIST Privacy Framework, modeled after the popular Cybersecurity Framework, and the NIST *National Initiative for Cybersecurity Education (NICE) Workforce Framework for Cybersecurity*. The NICE program has continued to convene and build a community dedicated to advancing the cybersecurity workforce, including developing and maintaining critical tools like the Workforce Framework and career pathfinders.

- Quantum Information Science: In October 2022, a team of researchers for the first time successfully combined two of the "spookiest" features of quantum mechanics to make a better quantum sensor: entanglement between atoms and delocalization of atoms. In doing so, these researchers have created a matter-wave interferometer that can sense accelerations with a precision that surpasses the standard quantum limit (a limit on the accuracy of an experimental measurement at a quantum level) for the first time. Future quantum sensors using this technique may be able to provide more precise navigation, explore for needed natural resources, more precisely determine fundamental constants such as the fine structure and gravitational constants, look more precisely for dark matter, or maybe even one day detect gravitational waves. In December 2022, Dr. Jun Ye, a NIST and JILA fellow was appointed to the National Quantum Initiative Advisory Committee. In that role he will counsel the Administration on ways to ensure continued American leadership in quantum information science. Dr. Ye is the winner of the prestigious 2022 Breakthrough Prize in Fundamental Physics for his contributions to the optical lattice clock, which enables precision tests of the fundamental laws of nature.

- Strengthening Cryptography: Current cryptographic algorithms rely on the fact that conventional computers have difficulty with factoring large numbers, which will no longer be the case when quantum computers enter the scene sometime in the near future. The possibility of quantum computing necessitates different mathematical tools to protect our information from quantum and conventional attacks. With these impending challenges in mind, On July 5, 2022, NIST announced the first group of encryption tools that are designed to withstand an attack by a future quantum computer, which could potentially defeat existing encryption algorithms that provide the security used to protect privacy in the digital systems we rely on every day, such as online banking and email software. The four selected algorithms will become part of NIST's post-quantum cryptographic (PQC) standards expected to be finalized in about two years.

- Artificial Intelligence (AI): NIST contributes to the research, standards and data required to realize the full promise of artificial intelligence (AI) as a tool that will enable American innovation, enhance economic security, and improve our quality of life. In January 2023 NIST released Version 1.0 of the AI Risk Management Framework (RMF) and the AI RMF Playbook to help manage risks associated with AI to individuals, organizations, and society. This rollout was the culmination of a long and transparent process that began in July 2021 with a

Request for Information to AI stakeholders, followed by the release of two drafts of the RMF for public comment in March 2022 and August 2022 and three workshops with AI stakeholders in October 2021, March 2022, and October 2022. NIST, on behalf of the Commerce Department, assembled the National AI Advisory Committee (NAIAC), a group of experts tasked with advising the President and the National AI Initiative Office on topics related to AI which convened in May and October of 2022 and February 2023 and which has formed working groups on trustworthy AI, AI R&D, AI workforce development, U.S. competitiveness, and international cooperation. With NIST's leadership, in 2021 the Interagency Standards

Policy Committee established a new AI subcommittee to bring together standards executives and practitioners from across government to discuss challenges and opportunities in AI standardization. NIST has also engaged actively with international AI efforts in the US-EU Trade and Technology Council (TTC) and the Quad. The U.S. (led by NIST, NSF, and OSTP) and UK are collaborating to develop prize challenges on advancing privacy-enhancing technologies to facilitate secure and privacy-protective data access and analytics and NIST is partnering with the NSF to launch a joint institute focused on building trustworthy AI, to be announced in April 2023. NIST laboratories continue to make progress exploiting AI to advance measurement science in areas such as advanced communications, manufacturing robotics, and materials science.

- Bioscience: NIST's research focuses on materials, measurements, and data to improve critical metrology needs in the biological sciences. In March of 2022, NIST opened the NIST Microbial Strain Collection program which serves as a repository to help develop microbial standards to support innovation and technology in areas such as biomanufacturing of microbial therapeutics, probiotics, infectious disease identification, and microbiome research. In July of 2022, NIST released a MPox Research Grade Test Material (RGTM) in 30 days to rapidly assist in the public need for MPox testing and slow the spread of the disease. Another RGTM that was released in January 2023 is the NISTCHO, a cell line that produces the highly characterized NISTMab which is critical for standardization in pharmaceutical production. The NISTCHO is the first living NIST material and can be used for QA/QC of antibody production as well as benchmarking fermentation and other biomanufacturing processes. NIST is also highly involved in the outputs from the white House Bioeconomy Executive Order which resulted in the release of a public lexicon for the bioeconomy in December of 2022 to harmonize the definitions used by this up-and-coming industry and ensure effective communication. Forthcoming in March 2023, in keeping with the Bioeconomy EO, NIST will release a report on how biotechnology and biomanufacturing can contribute to a more resilient U.S. supply chain.
- Resilience: NIST's resilience research focuses on the impact of hazards on buildings and communities and on post-disaster studies to help improve standards, codes, and practices for buildings and infrastructure systems. In 2022, the American Society of Civil Engineers published a revised standard for minimum design loads for buildings and other structures that includes first-of-a-kind tornado hazard maps based on NIST research. Once adopted by the International Code Council, this will provide tornado-prone regions with the guidance to design new facilities such as hospitals, fire and police stations, and other high-importance to resist tornado loads. NIST is also investigating significant building failures under the authority of the National Construction Safety

Team Act of 2002. Currently, NIST is documenting and evaluating the impacts of Hurricane Fiona on the performance of power and water infrastructure in Puerto Rico, especially the compounding effects of Hurricane Fiona on the recovery of schools, hospitals, businesses, and supply chains following Hurricane Maria. NIST is also performing a technical investigation into storm surge damages encountered due to Hurricane Ian and continuing the investigation into the partial collapse of the Champlain Towers South building in Surfside, FL. Recommendations from these investigations will help ensure that codes, standards, and practices are revised in order that building failures like these do not happen again in the future.

- Advanced Communications: NIST is helping to build the measurement infrastructures that will be crucial for developing future wireless systems, including Fifth Generation (5G) and beyond cellular systems, by developing new measurement methods, analysis, and tools for generating high-fidelity data. Recently, NIST expanded its suite of state-of-the-art testbeds to include a new 5G Coexistence Testbed that provides Federal agencies, academia, and industry with access to the newest generation of end-to-end 5G New Radio (NR) mm-Wave technology. As part of its work to support the development of measurement-based approaches for authenticating 5G hardware, NIST released Special Publication 1278, "5G Hardware Supply Chain Security Through Physical Measurements," in May 2022. In November 2022, NIST became the first federal agency to become a member of the Open Radio Access Network (O-RAN) Alliance, a nonprofit organization made up of mobile network operators, vendors, and academic and government institutions working to make radio access network technologies more open, intelligent and interoperable. NIST has entered into a cooperative research and development agreement (CRADA) with AIM Photonics, a Manufacturing USA institute whose purpose is to speed up the process for moving new technologies for manufacturing photonic chips from the lab to the foundry; NIST will be designing calibration devices that will help U.S. manufacturers and AIM Photonics develop new optoelectronic devices that will run at speeds of up to 110 GHz, four times the rate of today's chips.

- Manufacturing: NIST is working with industry and universities to develop essential measurement capabilities and forge precompetitive collaborations that help U.S. manufacturers overcome shared technical obstacles. As the field of additive manufacturing matures, transitioning what is now more of an art into a science depends on measurements and standards. In June of 2022, a first of kind standard, ASME Y14.46, identifying important geometric dimensioning and tolerancing parameters for additive manufacturing was published. This standard was possible due to NIST research. In December 2020, NIST awarded nearly four million dollars in grants to the Georgia Tech Research Corporation, University of Texas at El Paso, Purdue University, and Northeastern University to help accelerate the adoption of new measurement methods and standards in metals-based additive manufacturing (MBAM). In June 2021, NIST awarded an additional four million dollars to American Bureau of Shipping, Texas A&M University, and University of Wisconsin-Madison. In November 2021, NIST announced a Notice of Funding Opportunity to further accelerate the adoption of metals-based additive manufacturing (MBAM) and subsequently awarded $3.7 million in grants in July 2022 to help address current and future barriers to widespread adoption of MBAM through measurement science research. In December 2022, NIST entered into a CRADA with AIM Photonics that will give chip developers a critical new tool for designing faster chips that use both optical and electrical signals to transmit information. This small subset of recent accomplishments is representative of the diverse nature of scientific needs satisfied by NIST laboratory programs.

Many more interesting accomplishments and industry impacts can be found at: https://www.nist.gov/director/pao.

## Statement of Operating Objectives

*Priority Objectives for FY 2024*

*NIST Laboratory Research Priorities*

Throughout its history, NIST has provided new industries with foundational measurement tools that enhance reproducibility, interoperability, and reliability to accelerate innovation, adoption, and impact. With input from academia and industry, NIST has identified five strategic focus areas that will best position NIST to drive innovation in support of America's economic security in the coming decades:

- *Quantum Science*: NIST's world-leading expertise in quantum science, conducted with academic and industry partners, is furthering the development of new quantum measurement technologies upon which U.S. companies are building new businesses and services and contributing to the training of a growing U.S. quantum workforce.
- *Artificial Intelligence*: NIST is developing measurements and data that address the performance and reliability of AI systems to accelerate their widespread adoption and enable the Nation to realize the potential economic, societal, and innovation benefits that AI systems offer to consumers. NIST has also provided the AI community with a framework for managing risks and maximizing benefits from AI systems, the AIRisk Management Framework (RMF) Version 1.0, which was the product of an open process involving stakeholder input via commentary and NIST-hosted workshops.
- *Engineering Biology*: NIST is enabling the design and manufacture of biological systems -- for products such as high-value pharmaceuticals and commodity chemicals -- by developing advanced measurement capabilities from the molecular to the cellular system scale. NIST will continue to play a significant role to support the U.S. bioeconomy through building next generation measurement science (biometrology) capabilities and engineering biology laboratories for accelerating responsible biotechnology innovations.
- *Internet of Things*: NIST is leveraging its expertise in advanced communications, manufacturing systems, cybersecurity, and more to develop testing tools, best practices, and standards that support the widespread deployment of safe and reliable internet of things technologies and applications.
- *Climate*: NIST laboratories generate the measurements and research to address climate change in impactful areas from climate measurements and modeling of greenhouse gas emissions to research and tools to build more resilient communities and alternative energy infrastructure.

NIST has prioritized the work of its laboratories with these emerging technology areas, in addition to focusing on continuing priorities around cybersecurity, advanced communications, and advanced manufacturing.

NIST's research supports the development of technical standards that are crucial to drive innovation and applications. Over 400 NIST staff participate in international standards activities as technical experts and in leadership roles. Standards underpin every aspect of our daily lives, from enabling communication technologies such as Bluetooth and Wi-Fi to ensuring the safety of devices such as pacemakers and step ladders. NIST efforts promote confidence in the performance of products and enable international trade. The standards leadership and expertise provided by NIST is an essential element of a broader U.S. effort to lead in the emerging technologies that will define the 21st century economy.

Explanation and Justification

| Line Item | | 2022 Actual | | 2023 Enacted* | | 2024 Base | |
|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Laboratory Programs | Pos./BA | 2,422 | $727,767 | 2,534 | $763,333 | 2,534 | $794,486 |
| | FTE/Obl | 2,164 | 695,168 | 2,404 | 820,971 | 2,423 | 794,486 |

* FY 2023 Enacted amounts do not include amounts from the Disaster Relief Supplemental Appropriations Act, 2023

Laboratory Programs (FY 2024 Request by Program Area shown below. Total Funding: $794.5 million and 2,534 Positions)

The FY 2024 base budget request for NIST Laboratory Programs focus on the following mission functions and programmatic areas:

***Exploratory Measurement Science ($82.6 million)*** – NIST's mission requires deep expertise in a broad range of disciplines. To best position NIST to support U.S. technological interests well into the future, it is essential that NIST maintains a portfolio of exploratory measurement science research programs. This portfolio includes investing in higher-risk and potentially transformative projects selected in a competitive internal process and the NIST National Research Council Postdoctoral Research Associateship Program that brings researchers of exceptional promise to NIST. NIST invests in higher-risk and potentially transformative measurement science research to stay on the cutting edge of science and technology trends. NIST's exploratory research accelerates innovation in emerging areas. For example, as part of the Innovations in Measurement Science program NIST just launched a project to capitalize on emerging 5G millimeter wave (mm-wave) technology to develop quantum metrology in the (10 – 100) GHz range. This program aims to remove the metrology roadblocks that inhibit the broader quantum community from developing quantum systems operating in this higher frequency range, which would then allow operation of "hot" qubits at temperatures up to 1 K. This temperature range is substantially less expensive and technologically challenging to work at then the much colder temperatures that researchers using superconducting qubits currently require.

***Advanced Manufacturing and Material Measurements ($131.8 million)*** – NIST has partnered with the U.S. manufacturing sector for more than a century and has a proven track record of delivering the tools and technical expertise that existing manufacturers and aspiring start-ups need. NIST's Advanced Manufacturing and Material Measurements activities provide industry with precision measurement technologies, tests,

protocols, trusted systems, and world-class scientific and engineering knowledge through targeted research across a broad portfolio, including advanced materials development, advanced sensing, additive manufacturing, and incorporating artificial intelligence into materials science data workflows. NIST's efforts support the Administration's Executive Order on Ensuring the Future Is Made in All of America by All of America's Workers and the
Administration's Executive Order on America's Supply Chains by enabling the development of a strong U.S. manufacturing base that is essential to our economic and national security.

***Fundamental Measurement, Quantum Science, and Measurement Dissemination ($220.2 million)*** – The NIST Laboratory Programs work at the frontiers of measurement science to ensure the U.S. system of measurements is firmly grounded on sound scientific and technical principles. NIST determines the definitive methods for nearly every kind of measurement employed in commerce and research, provides NIST-traceable calibrations, and disseminates standards and best practices throughout the Nation. The NIST laboratories address increasingly complex measurement challenges as new technologies develop and evolve. NIST's measurement research and services remain central to innovation, productivity, trade, national security, and public safety. Quantum science is a top strategic priority for NIST and the country. A recognized world leader in the field of quantum science and technology, NIST plays a central role in the National Quantum Initiative and is developing critical measurement capabilities necessary for the U.S. to maintain and strengthen its competitive edge in the global race to capture anticipated benefits of emerging quantum technologies. NIST research, combined with its expertise in advanced materials, nanofabrication, photonics, and microelectronics, the fundamental science and workforce development at our network of joint institutes (JILA, the Joint Quantum Institute, and QuICS), and industry partnerships within the Quantum Economic Development Consortium (QED-C), make NIST a true hub for all aspects of quantum innovation. In FY 2024, NIST will continue to focus on broadening its research portfolio on quantum engineering activities to enhance translation of science and technology from NIST laboratories to the marketplace. This will include expanded quantum engineering and innovation partnerships with academia, government, and industry, as well as investment in fundamental science and infrastructure necessary to improve performance and reliability of quantum technologies for anticipated practical applications in sensing, networking, and computing, and measurement standards associated with these.

***Advanced Communications, Networks, and Scientific Data Systems ($89.2 million)*** – NIST's Advanced Communications, Networks, and Scientific Data Systems activities enable U.S. industry to develop and deploy secure, reliable, high-speed wireless and wireline communications systems that are critical to U.S. economic competitiveness, safety, and security. NIST measurement science research, development of simulation tools and data sets, test bed construction, and support for the development of standards all serve to accelerate the deployment of next-generation communication technologies, such as fifth generation (5G) cellular systems, next-generation versions of the IEEE 802.11 (Wi-Fi) standard that include support for mm-Wave communications and antenna beamforming, integrated wireless sensing and communications systems, high-resolution channel sounding systems, and the National Public Safety Broadband Network. These technologies will enable autonomous vehicles, advanced sensing systems, internet of things (IoT) applications future Machine Learning (ML) systems and Artificial Intelligence (AI) systems, and public safety communications with enhanced capabilities

such as mission-critical voice and location-based services. NIST is committed to solving the measurement and deployment challenges of these fast-moving fields to help the U.S. achieve and maintain global leadership in these areas.

***Cybersecurity and Privacy ($97.7 million)*** – NIST is the DOC lead agency on Cybersecurity issues. NIST's Cybersecurity and Privacy activities strengthen the security of our digital world through a portfolio that bridges foundational and applied cybersecurity research, and through the development of publicly available frameworks, standards, and technical guidance documents. For example, NIST's work in reducing the cybersecurity risk of global supply chains is critical as the U.S. recovers from the COVID-19 pandemic. NIST's sustained outreach supports the effective application of standards and best practices enabling the adoption of practical cybersecurity and privacy. Through internal research and collaboration with the private sector, academia, standards development organizations, other government agencies, and national and international stakeholders, NIST addresses the Nation's current and future measurement science needs and is responsive to Congressional mandates and Executive Orders.

***Health and Biological Systems Measurements ($40.2 million)*** – NIST is paving the way for a vibrant U.S. bioeconomy by advancing research and development in engineering biology, biomanufacturing measurements and technologies, standards, and data for impacts in healthcare, climate change and environmental sustainability, food and agriculture, and supply chain resilience. As a non-regulatory agency, NIST provides a solid foundation of measurement assurance that enables innovations in health and bioscience and helps accelerate the development, manufacturing, and regulatory approval of innovative, high-quality biologic medicines: Medical researchers and manufacturers of diagnostics and treatments use NIST research, calibrations, test materials, and international standards development leadership to be able to efficiently develop new products, meet regulatory requirements, ensure efficacy and safety of treatments, and maintain the global competitiveness of U.S. companies. NIST's programs range from supporting underlying technologies and measurements for engineering/synthetic biology and biomanufacturing to regenerative medicine, advanced therapies, and genomics. NIST efforts include utilizing new developments in biotechnology to harness the power of complex biological systems (primarily cells) predictably and safely for the manufacture of advanced therapeutics, sustainable fuels, chemical feedstocks, and advanced materials.

***Physical Infrastructure and Resilience ($66.6 million)*** – NIST's Physical Infrastructure and Resilience activities support the safety, interoperability, and resilience of the Nation's infrastructure at the component, structure, and system levels including power, transportation, water, and telecommunications. NIST's research supports the development of building codes that make the built environment healthier for occupants, more resilient against hazards and natural disasters, and safer for both residents and first responders. In collaboration with policymakers, building officials, and planning groups, NIST produces guides to help communities integrate resilience into their economic development, zoning, mitigation, and other local planning activities that impact buildings, public utilities, and infrastructure systems. In collaboration with industry and academia, NIST performs research into novel materials, tools, instruments, and protocols to provide a technical foundation to standards and codes and to support innovation.

***NIST User Facilities ($66.2 million)*** – NIST operates two unique and valuable user facilities that provide U.S. scientists with access to cutting-edge expertise and capabilities to perform innovative research beyond the reach of the user's own laboratory. The NIST Center for Neutron Research (NCNR) features world-class neutron instrumentation and expertise in the development and application of neutron measurement technologies. The Center for Nanoscale Science and Technology (CNST) provides users rapid access to state-of-the-art tools needed to fabricate and characterize nanoscale structures, devices, and materials.

The ongoing research and development work outlined above are performed by the six NIST laboratory organizational units which house the staff and facilities necessary to conduct and deliver the ground-breaking measurement science, standards, and technology work in the focus areas. The six laboratories are in Gaithersburg, Maryland, and Boulder, Colorado. Additional information on recent activities specific to each of these laboratories can be found online through the websites provided below:

- Communications Technology Laboratory (CTL): The Communications Technology Laboratory promotes the development and deployment of advanced communications technologies through the dissemination of high-quality measurements, data, and research supporting U.S. innovation, industrial competitiveness, and public safety. CTL work establishes the metrological foundations for higher speeds, better connections, and more ubiquitous access amid rising wireless demand. With expertise honed over decades of theoretical and experimental work in antennas and wireless propagation, materials science, and electronics measurement and testing, CTL is an independent, unbiased arbiter of trusted measurements and standards to government and industry. CTL focuses efforts on establishing vital technological foundations for the ongoing wireless revolution across the following focus areas:
    - Public Safety Communications Research – Driving innovation and conducting research that enables the development of performance-based standards for first responder communications;
    - Testing for Wireless Innovations – Facilitating and coordinating sensing, waveform analysis, and related engineering capabilities while creating a trusted capability for evaluating innovations in wireless resource usage;
    - Next-Generation Communications for 5G and Beyond – Advancing measurement science for next-generation wireless systems including characterizing millimeter wave (mmWave) radio channels and performance assessment;
    - Fundamental Metrology for Communications – Developing theory, measurements, and standards for the next generation of radio frequency systems and other technologies that will underpin the future development of wireless communications; and
    - Leadership and technical expertise in advanced communications related standards development – Over 30 NIST experts lead and participate in global standards and specification development organizations such as 3GPP, IEEE, IETF, ITU-T, O-RAN Alliance, ATIS, ISO-IEC/JTC1, FIDO Alliance, and WinnForum.

https://www.nist.gov/ctl

- Engineering Laboratory (EL): The Engineering Laboratory researches engineering and manufacturing processes, systems, and equipment; engineering of sustainable and energy-efficient buildings; and engineering of disaster-resilient buildings, communities, and infrastructure. EL's studies of major disasters help guide research and develop recommendations for design and construction practices to reduce hazards. NIST validates research in realistic end-use scenarios using EL's unique test facilities, including the National Fire Research Laboratory that combines large-scale, realistic, fire conditions, and structural loads to study the fire behavior of buildings and construction materials; the Robotics Test Facility for evaluating robotic sensing, manipulation, endurance, and search and rescue

performance; and the Net-Zero Energy Residential Test Facility, a testbed for combining and assessing new home-scale energy technologies in a realistic environment. EL research and facilities focus on the following strategic goal areas:

- Disaster-Resilient Buildings, Infrastructure, and Communities – Enabling engineering of the built environment to enhance the resilience of U.S. buildings, communities, and infrastructure to earthquakes, wind, fire, and other hazards;
- Energy-Efficient, High-Performance Buildings – Accelerating the implementation of cost-effective, energy-efficient, grid-integrated buildings that have healthy and comfortable indoor air, reduced effects on climate change, and increased resilience through advances in measurement science and standards;
- Advanced Manufacturing – Developing and deploying measurement science that forms the scientific and technical basis for standards and enables U.S. industry to assess and reduce the risk of investment in advanced manufacturing technologies.

https://www.nist.gov/el

- Information Technology Laboratory (ITL): The Information Technology Laboratory develops and deploys standards, tests, and metrics to make the Nation's information systems more secure, usable, interoperable, and reliable. ITL's strategy is to maximize the benefits of information technology (IT) to society through a balanced IT measurement science and standards portfolio of three major activities: fundamental research in mathematics, statistics, and IT; applied IT research and development; and standards development and technology transfer. ITL identifies emerging and high-priority technologies, conducts path-breaking research to advance our understanding of their limits and capabilities and potential applications, and develops security and privacy solutions that have a high impact on the U.S. critical infrastructures. As a world-class measurement and testing laboratory spanning diverse areas of computer science, mathematics, statistics, and systems engineering, ITL supports areas of national importance, including:
  - Cybersecurity and Privacy – Bridging foundational and applied cybersecurity and privacy research and development and cybersecurity operations through the development of standards and technical guidance;
  - Artificial Intelligence – Leading Federal efforts in AI-related standards development and driving new developments in understanding foundational aspects of trustworthy AI;
  - Internet of Things – Cultivating trust in the IoT and foster an environment that enables innovation on a global scale through standards, guidance, and related tools;
  - Reliable Computing; and
  - Future Computing Technologies and Applications.

https://www.nist.gov/itl

- Material Measurement Laboratory (MML): The Material Measurement Laboratory is the national reference laboratory for measurements in the chemical, biological, and material sciences. MML conducts research on the composition, structure, and properties of industrial, biological, and environmental materials and processes. MML develops tools such as reference measurement procedures, certified reference materials, and critically evaluated data and best-practice guides used by U.S. industry to assure measurement quality and improve process efficiency. This work improves U.S. competitiveness in an increasingly challenging global environment. MML enables measurements in areas of national importance, including:
    - Advanced Materials – Providing a gateway to new discoveries that involve nanomaterials, advanced electronics, structural steels, complex fluids, and more through the development of testbeds, measurements, models, and data;
    - Energy and Climate – Research and standards to advance next-generation climate measurements, and carbon capture approaches to mitigate climate change;
    - Health Care – Enhancing technology realization in clinical diagnostics, regenerative medicine, measurement services to ensure food nutrition and safety, environmental exposure metrology, and driving advances to enable applications of engineering biology and biotechnology;
    - Infrastructure – Developing methods to test and predict the health of physical infrastructure from bridges and buildings and the materials used to build them, as well as fuel pipelines and water infrastructure;
    - Manufacturing – Accelerating development of lightweight alloys for fuel-efficient automobiles biomanufacturing, and chemical manufacturing; as well as new measurements and standards for product sustainability and recycling to support the circular economy; and
    - Safety, Security, and Forensics – Providing tools to help forensic crime laboratories validate their analytical methods and ensure accuracy in their results for DNA and biological evidence, fingerprint and pattern evidence, illicit drugs, digital evidence, ballistics, and trace evidence, developing metrologies for threat detection and protective materials.

https://www.nist.gov/mml

NIST Center for Neutron Research (NCNR): The NIST Center for Neutron Research is one of the Nation's premier neutron research facilities. The NCNR typically provides 225 days of reactor operation annually, serves over 2,500 researchers from 165 organizations and labs, and accounts for about 40% of all U.S. neutron research. The focus in FY2024 is on continuing to implement the enforcement actions of the U.S. NRC's Confirmatory Order resulting from the fuel damage incident of February 3, 2021, and on scientific operations for the benefit of the U.S. scientific community.

The NCNR is operated as a national user facility using a peer-reviewed, merit-based proposal approach. To address science and engineering problems of major interest, the NCNR continually invests in developing state-of-the-art neutron measurement capabilities, including:

- Cold Neutrons – NCNR optimizes cold neutrons for studying the structure of materials including polymers, pharmaceuticals, and magnetic materials, a capability constantly evolved through upgrades in enhanced productivity for a variety of techniques;
- Neutron Scattering – Users of the NCNR can probe the structure of materials at the nanometer scale through neutron scattering techniques.
- Neutron Imaging – NCNR is increasing its outstanding neutron imaging capabilities – which are uniquely able to image light elements, like hydrogen and lithium, and can help researchers optimizing fuel cell and battery designs - a new cold neutron microscope under development; and
- Powerful Partnerships – NCNR develops instrumentation in partnership with other agencies and stakeholders, including the Center for High Resolution Neutron Scattering, co-funded with National Science Foundation, and the private-public nSoft Consortium (established by NIST) focused on soft-matter research.

https://www.nist.gov/ncnr

- Physical Measurement Laboratory (PML): The Physical Measurement Laboratory is a world leader in measurement science, developing tools and techniques to meet the demands of American industry and science, providing calibrations, and disseminating standards and best practices. To achieve its mission, PML draws on its core capabilities to advance, realize, and disseminate the complete range of physical measurements, covering every unit of the International System of Units (SI), and thus, affecting nearly every aspect of modern life. To maintain state-of-the-art capabilities in realizing, disseminating, and measuring these quantities, PML invests in fundamental scientific research to push the boundaries and prepare for next-generation measurement needs. This measurement expertise also helps America address key technical challenges in:
  - Manufacturing – Helping industry improve efficiency by providing measurement solutions, researching new embedded standards, and facilitating the commercialization of NIST-pioneered technologies through the *NIST on a Chip Program*;
  - Energy – Enabling effective transition to solid state lighting and initiating research to support advanced electric grid, hydrogen fuel cell and rechargeable battery technologies;
  - Advanced Microelectronics – NIST is a crucial partner to the U.S. microelectronics industry, working with them to understand and address technical challenges for future electronics such as 2D materials, advanced packaging, atomic-scale defects, and the application of standards;
  - HealthCare – Providing traceability for medical diagnostics, nuclear medicine treatments, and expanding capabilities into new modalities, like hyperspectral imaging;

- Climate - Accurate, comparable physical measurements are critical for monitoring, predicting, mitigating, and adapting to climate change;
- Quantum science – Leading research in novel quantum systems, related support technologies, and practical implementations, enabling quantum-enhanced measurements and standards.

https://www.nist.gov/pml

**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**PROGRAM CHANGES FOR 2024**
(Dollar amounts in thousands)

| | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Advancing Research in Critical and Emerging Technologies | Pos/BA | 261 | $137,930 | 304 | $157,930 | 43 | $20,000 |
| | FTE/Obl. | 261 | 137,930 | 293 | 157,930 | 32 | 20,000 |

**Advancing Research in Critical and Emerging Technologies (+$20,000, 32 FTE/43 Positions):** NIST requests an increase of $20 million above the FY 2023 enacted level to advance research in the critical and emerging technologies that will be essential for America's economic and national security. These funds would create and expand research partnerships, build new measurement testbeds, and support development of standards in the areas of artificial intelligence (AI), quantum engineering, biotechnology, and advanced communications. NIST will develop new capabilities such as research to accelerate technically sound standards for trustworthy AI systems for a variety of commercial applications; address the lack of U.S. quantum engineering capability; deploy innovative biological measurement platforms and biomanufacturing testbeds; and support the design and deployment of next-generation wireless communications systems. Specifically, the request will increase efforts in the following four themes:

1. Artificial intelligence ($5 million). NIST will lead Federal efforts in AI-related standards development, measurement, and evaluation of trustworthy AI. Funds would support new work through the NIST AI Collaborative Institute (AICI) and increase technical expertise in laboratory research efforts. With this investment, NIST will build on its existing AI research and development (R&D) portfolio to catalyze research, trust, and innovation in AI and make progress towards solving critical AI centric challenges. Working closely with experts and users from industry, academia, and government, the AICI will establish testbeds for regular benchmarking and evaluation of AI systems, consistent with the final National Security Commission on Artificial Intelligence report.

2. Quantum information science ($5 million). NIST will improve metrology of high-fidelity, scaled quantum systems, across multiple and hybrid physical platforms, supporting U.S. industry efforts to develop large-scale quantum computing processors, metrology tools for quantum networking, and transformative sensors. NIST would expand work with existing partners such as the QED-C to enhance innovation from early-stage discovery, to incubators, to proof of concept that enables NIST to facilitate the development of quantum technologies and promote economies of scale with an emphasis on practical quantum applications. NIST will address growing workforce needs in quantum engineering through additional support to postdocs and graduate students.

3. Biotechnology ($5 million). NIST will invest in measurement platforms, standards, automation, and advanced data analytics integration strategies for rapid development and translation of innovative biotechnologies and biomanufacturing processes to address societal goals in health care, climate, food and agriculture, energy, and supply chain resilience, and promote growth of the U.S. bioeconomy while helping to protect and secure emerging biotechnologies and biological data.

4. Advanced Communications Research and Standards ($5 million). NIST will provide U.S. industry with the fundamental measurements and data that it needs to be first-to-market with next-generation wireless communications systems and optical communications technologies. NIST will advance measurement science and standards to accelerate the development of the next generation of communications technologies, including 6G cellular systems and the Nationwide Public Safety Broadband Network for first responders. NIST will support research in standards development and work with industry consortia such as the NIST NextG Channel Model Alliance and the Open Radio Access Network (O-RAN) Alliance to ensure continued U.S. leadership in international standards development organizations such as ISO, ITU, and 3GPP.

The request increases NIST's investment in its Advanced Communications, Networks, and Scientific Data Systems portfolio by $10 million. The request increases NIST's investment in its Health and Biological Systems Measurements portfolio by $5 million. The request increases NIST's investment in its Fundamental Measurement, Quantum Science, and Measurement Dissemination portfolio by $5 million.

| **Performance Measure:** Number of benchmarks evaluated using newly developed AI testbeds | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|
| With increase | 1 | 3 | 5 | 8 | 10 |
| Without increase | 0 | 0 | 0 | 0 | 0 |

| **Performance Measure:** Additional graduate student/postdocs trained in quantum engineering | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|
| With increase | 2 | 2 | 3 | 3 | 3 |
| Without increase | 0 | 0 | 0 | 0 | 0 |

| **Performance Measure:** Biotechnology and biomanufacturing standards and processes developed and translated into economic use. | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|
| With increase | 3 | 6 | 9 | 12 | 15 |
| Without increase | 1 | 1 | 2 | 2 | 2 |

| **Performance Measure:** Number of measurement and modeling methodologies for wireless innovations, and other contributions (e.g., workshops, datasets) to advanced communications standards development | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|
| With increase | 2 | 3 | 4 | 6 | 8 |
| Without increase | 1 | 2 | 2 | 2 | 3 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Measurement Science, Services, and Programs
Subactivity: Laboratory Programs
Program Change: Advancing Research in Critical and Emerging Technologies

| Full-time permanent | | | | | |
|---|---|---|---|---|---|
| Title | | Grade | Number | Annual Salary | Total Salaries |
| Electrical Engineer | | ZP III | 1 | 94,199 | 94,199 |
| Electrical Engineer | | ZP IV | 1 | 132,368 | 132,368 |
| Physicist | | ZP V | 1 | 155,700 | 155,700 |
| Computer Scientist | | ZP III | 1 | 94,199 | 94,199 |
| Computer Scientist | | ZP IV | 1 | 132,368 | 132,368 |
| Computer Scientist | | ZP V | 2 | 155,700 | 311,400 |
| Program Manager | | ZA III | 1 | 94,199 | 94,199 |
| Biologist | | ZP III | 3 | 94,199 | 282,597 |
| Biologist | | ZP IV | 3 | 132,368 | 397,104 |
| Biologist | | ZT II | 3 | 53,105 | 159,315 |
| Physicist | | ZP IV | 1 | 132,368 | 132,368 |
| Public Safety Engineer | | ZP IV | 9 | 132,368 | 1,191,312 |
| Advanced Communications Engineer | | ZP IV | 9 | 132,368 | 1,191,312 |
| Biologist | | ZT III | 3 | 71,531 | 214,593 |
| Administrative/technical support | | ZA II | 4 | 71,531 | 286,124 |
| Total | | | 43 | | 4,869,158 |
| Less lapse | 25.00% | | (11) | | (1,217,290) |
| Total full-time permanent (FTE) | | | 32 | | 3,651,868 |
| 2024 pay Adjustment (5.2%) | | | | | 189,897 |
| | | | | | 3,841,765 |
| | | | | | |
| **Personnel Data Summary** | | | | | |
| Full-time Equivalent Employment (FTE) | | | | | |
| Full-time permanent | | | 32 | | |
| Part-time permanent | | | 0 | | |

| | | | | | |
|---|---|---|---|---|---|
| Part-time temporary | | | 0 | | |
| Total FTE | | | 32 | | |
| | | | | | |
| Authorized Positions | | | | | |
| Full-time permanent | | | 43 | | |
| Part-time permanent | | | 0 | | |
| Full-time temporary | | | 0 | | |
| Part-time temporary | | | 0 | | |
| Total Positions | | | 43 | | |
| | | | | | |

# Department of Commerce
# National Institute of Standards and Technology
# Scientific and Technical Research and Services
# PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Direct Obligations amounts in thousands)

Activity: Measurement Science, Services, and Programs
Subactivity: Laboratory Programs

| | Object Class | 2022 Actuals | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 11.1 | Full-time permanent compensation | 257,229 | 286,187 | 298,733 | 302,575 | 3,842 |
| 11.3 | Other than full-time permanent | 20,183 | 20,942 | 22,005 | 22,005 | 0 |
| 11.5 | Other personnel compensation | 6,794 | 9,990 | 10,943 | 10,943 | 0 |
| 11.8 | Special personnel services payments | 0 | 0 | 0 | 0 | 0 |
| 11.9 | Total personnel compensation | 284,206 | 317,119 | 331,681 | 335,523 | 3,842 |
| 12.1 | Civilian personnel benefits | 105,015 | 115,112 | 120,971 | 122,236 | 1,265 |
| 13 | Benefits for former personnel | 15 | 15 | 15 | 15 | 0 |
| 21 | Travel and transportation of persons | 5,738 | 9,295 | 9,270 | 9,366 | 96 |
| 22 | Transportation of things | 855 | 859 | 836 | 859 | 23 |
| 23 | Rent, communications, and utilities | 0 | 0 | 0 | 0 | 0 |
| 23.1 | Rental payments to GSA | 141 | 144 | 468 | 468 | 0 |
| 23.2 | Rental payments to others | 1,939 | 1,939 | 1,978 | 1,978 | 0 |
| 23.3 | Communications, utilities, and misc. charges | 13,253 | 20,738 | 18,643 | 20,741 | 2,098 |
| 24 | Printing and reproduction | 368 | 411 | 368 | 408 | 40 |
| 25 | Other contractual services | 0 | 0 | 0 | 0 | 0 |
| 25.1 | Advisory and assistance services | 3,026 | 3,026 | 3,086 | 3,086 | 0 |
| 25.2 | Other services from non-Federal sources | 56,756 | 134,182 | 57,534 | 59,216 | 1,682 |
| 25.3 | Other goods and services from Federal sources | 41,640 | 45,587 | 42,116 | 42,581 | 465 |
| 25.4 | Operation and maintenance of facilities | 0 | 0 | 0 | 0 | 0 |
| 25.5 | Research and development contracts | 27,677 | 30,679 | 28,334 | 28,384 | 50 |
| 25.6 | Medical care | 0 | 0 | 0 | 0 | 0 |
| 25.7 | Operation and maintenance of equipment | 15,763 | 17,890 | 17,399 | 17,632 | 233 |
| 25.8 | Subsistence and support of persons | 0 | 0 | 0 | 0 | 0 |
| 26 | Supplies and materials | 27,984 | 29,312 | 29,603 | 29,820 | 217 |
| 31 | Equipment | 36,329 | 41,852 | 42,573 | 45,807 | 3,234 |
| 32 | Lands and structures | 0 | 0 | 0 | 0 | 0 |
| 33 | Investments and loans | 0 | 0 | 0 | 0 | 0 |
| 41 | Grants, subsidies and contributions | 74,460 | 92,808 | 89,608 | 96,363 | 6,755 |
| 42 | Insurance claims and indemnities | 0 | 0 | 0 | 0 | 0 |
| 43 | Interest and dividends | 3 | 3 | 3 | 3 | 0 |
| 44 | Refunds | 0 | 0 | 0 | 0 | 0 |
| 99.9 | Total obligations | 695,168 | 860,971 | 794,486 | 814,486 | 20,000 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**PROGRAM CHANGES FOR 2024**
(Dollar amounts in thousands)

| | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Cybersecurity and Privacy | Pos/BA | 123 | $93,890 | 148 | $113,890 | 25 | $20,000 |
| | FTE/Obl. | 123 | 93,890 | 142 | 113,890 | 19 | 20,000 |

**Cybersecurity and Privacy (+$20,000, 19 FTE/25 Positions) -** Robust cybersecurity is essential to national and economic security and can be a market differentiator that helps U.S. industry succeed in global markets. NIST's cybersecurity and privacy efforts provide industry and government with robust technical standards and best practices, inform policy in government and industry, and result in the development and adoption of best practices. Cybersecurity threats continue to evolve, and multiple new responsibilities have been directed to NIST. NIST requests an increase of $20 million to increase efforts to build trust in the products, technologies, and services upon which consumers, industry, government agencies, the Nation, and international partners rely. NIST will extend and strengthen its capacity to conduct research, develop standards and guidelines, and demonstrate the practical application of cybersecurity and privacy solutions through NIST's National Cybersecurity Center of Excellence. These investments will help NIST meet increased demand in areas of critical national importance such as digital identity research, including in biometrics and human factors, privacy-enhancing technologies, cryptography, commercial and open-source software, hardware, and Internet of Things (IoT) devices, and in strengthening our cybersecurity and privacy workforce.

Cybersecurity is a national priority for the U.S. government, emphasized in Executive Order 14028 on Improving the Nation's Cybersecurity, National Security Memorandum (NSM) on Improving Cybersecurity for Critical Infrastructure Control Systems, and NSM-10 on Promoting U.S. Leadership in Quantum Computing While Mitigating Risks to Vulnerable Cryptographic Systems. The Department of Commerce Strategic Plan underscores the criticality of cybersecurity in driving U.S. innovation and global competitiveness under Strategic Objective 1.6, Improve the Nation's cybersecurity and protect Federal Government networks. As the Department's lead for this objective, NIST is dedicated to strengthening cybersecurity through research, standards, and best practices.

NIST carries out critical cybersecurity responsibilities under laws including the National Defense Authorization Act (NDAA) of 2021, Federal Information Security Modernization Act of 2014, Internet of Things Cybersecurity Improvement Act of 2020, NIST Small Business Cybersecurity Act, and Cybersecurity Enhancement Act of 2014. With the requested funding NIST will be able to deliver cybersecurity and privacy standards, guidelines, and other resources needed to strengthen U.S. supply chains, improve cybersecurity education, better protect Federal agencies and the economy writ large, and help US industry be more competitive in global markets.

These funds will also accelerate implementation of the layered cyber deterrence strategy outlined by the Cybersecurity Solarium Commission, specifically for NIST's role in advancing standards and the cybersecurity workforce.

The request increases NIST's investment in its Cybersecurity and Privacy portfolio by $20.0 million.

**Performance Measure:** Cumulative number of NCCoE project collaborators

| | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|
| Cumulative number of partnerships in workforce grants program | 10 | 12 | 14 | 16 | 18 |
| Cumulative number of NCCoE project collaborators | 360 | 370 | 380 | 390 | 400 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Measurement Science, Services, and Programs
Subactivity: Laboratory Programs
Program Change Cybersecurity and Privacy

| Title | | Grade | Number | Annual Salary | Total Salaries |
|---|---|---|---|---|---|
| Computer Scientist | | ZP V | 1 | $155,700 | $155,700 |
| Computer Scientist | | ZP IV | 2 | 132,368 | 264,736 |
| Computer Scientist | | ZP III | 1 | 94,199 | 94,199 |
| Cryptographer | | ZP V | 1 | 155,700 | 155,700 |
| Cryptographer | | ZP IV | 2 | 132,368 | 264,736 |
| Cryptographer | | ZP III | 1 | 94,199 | 94,199 |
| IT Specialist | | ZP V | 1 | 155,700 | 155,700 |
| IT Specialist | | ZP IV | 2 | 132,368 | 264,736 |
| IT Specialist | | ZP III | 2 | 94,199 | 188,398 |
| Computer Engineer | | ZP V | 1 | 155,700 | 155,700 |
| Computer Engineer | | ZP IV | 2 | 132,368 | 264,736 |
| Computer Engineer | | ZP III | 2 | 94,199 | 188,398 |
| Information Security Specialist | | ZP IV | 2 | 132,368 | 264,736 |
| Information Security Specialist | | ZP III | 1 | 94,199 | 94,199 |
| IT Project Manager | | ZP IV | 2 | 132,368 | 264,736 |
| Administrative/Technical Support | | ZA II | 2 | 71,531 | 143,062 |
| Total | | | 25 | | 3,013,671 |
| Less lapse | 25.00% | | (6) | | (753,418) |
| Total full-time permanent (FTE) | | | 19 | | 2,260,253 |
| 2024 pay Adjustment (5.2%) | | | | | 117,533 |
| Total | | | | | $2,377,786 |
| | | | | | |
| **Personnel Data Summary** | | | | | |
| Full-time Equivalent Employment (FTE) | | | | | |
| Full-time permanent | | | 19 | | |
| Part-time permanent | | | 0 | | |

| | | | | | |
|---|---|---|---|---|---|
| Full-time temporary | | | 0 | | |
| Part-time temporary | | | 0 | | |
| Total FTE | | | 19 | | |
| | | | | | |
| Authorized Positions | | | | | |
| Full-time permanent | | | 25 | | |
| Part-time permanent | | | 0 | | |
| Full-time temporary | | | 0 | | |
| Part-time temporary | | | 0 | | |
| Total Positions | | | 25 | | |
| | | | | | |

# Department of Commerce
# National Institute of Standards and Technology
# Scientific and Technical Research and Services
# PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Direct Obligations amounts in thousands)

Activity: Measurement Science, Services, and Programs
Subactivity: Laboratory Programs

| | Object Class | 2022 Actuals | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 11.1 | Full-time permanent compensation | $257,229 | $286,187 | $298,733 | $301,111 | $2,378 |
| 11.3 | Other than full-time permanent | 20,183 | 20,942 | 22,005 | 22,005 | 0 |
| 11.5 | Other personnel compensation | 6,794 | 9,990 | 10,943 | 10,943 | 0 |
| 11.8 | Special personnel services payments | 0 | 0 | 0 | 0 | 0 |
| 11.9 | Total personnel compensation | 284,206 | 317,119 | 331,681 | 334,059 | 2,378 |
| 12.1 | Civilian personnel benefits | 105,015 | 115,112 | 120,971 | 121,754 | 783 |
| 13 | Benefits for former personnel | 15 | 15 | 15 | 15 | 0 |
| 21 | Travel and transportation of persons | 5,738 | 9,295 | 9,270 | 9,333 | 63 |
| 22 | Transportation of things | 855 | 859 | 836 | 845 | 9 |
| 23 | Rent, communications, and utilities | 0 | 0 | 0 | 0 | 0 |
| 23.1 | Rental payments to GSA | 141 | 144 | 468 | 468 | 0 |
| 23.2 | Rental payments to others | 1,939 | 1,939 | 1,978 | 1,978 | 0 |
| 23.3 | Communications, utilities, and misc. charges | 13,253 | 20,738 | 18,643 | 20,753 | 2,110 |
| 24 | Printing and reproduction | 368 | 411 | 368 | 380 | 12 |
| 25 | Other contractual services | 0 | 0 | 0 | 0 | 0 |
| 25.1 | Advisory and assistance services | 3,026 | 3,026 | 3,086 | 3,086 | 0 |
| 25.2 | Other services from non-Federal sources | 56,756 | 134,182 | 57,534 | 65,695 | 8,161 |
| 25.3 | Other goods and services from Federal sources | 41,640 | 45,587 | 42,116 | 42,493 | 377 |
| 25.4 | Operation and maintenance of facilities | 0 | 0 | 0 | 0 | 0 |
| 25.5 | Research and development contracts | 27,677 | 30,679 | 28,334 | 28,334 | 0 |
| 25.6 | Medical care | 0 | 0 | 0 | 0 | 0 |
| 25.7 | Operation and maintenance of equipment | 15,763 | 17,890 | 17,399 | 17,599 | 200 |
| 25.8 | Subsistence and support of persons | 0 | 0 | 0 | 0 | 0 |
| 26 | Supplies and materials | 27,984 | 29,312 | 29,603 | 29,892 | 289 |
| 31 | Equipment | 36,329 | 41,852 | 42,573 | 43,191 | 618 |
| 32 | Lands and structures | 0 | 0 | 0 | 0 | 0 |
| 33 | Investments and loans | 0 | 0 | 0 | 0 | 0 |
| 41 | Grants, subsidies and contributions | 74,460 | 92,808 | 89,608 | 94,608 | 5,000 |
| 42 | Insurance claims and indemnities | 0 | 0 | 0 | 0 | 0 |
| 43 | Interest and dividends | 3 | 3 | 3 | 3 | 0 |
| 44 | Refunds | 0 | 0 | 0 | 0 | 0 |
| 99.9 | Total obligations | $695,168 | $860,971 | $794,486 | $814,486 | $20,000 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**PROGRAM CHANGES FOR 2024**
(Dollar amounts in thousands)

| | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Trustworthy and Resilient Domestic Supply Chains | Pos/BA | 492 | $145,855 | 510 | $153,855 | 18 | $8,000 |
| | FTE/Obl. | 492 | 145,855 | 505 | 153,855 | 13 | 8,000 |

**Trustworthy and Resilient Domestic Supply Chains (+$8,000, 13 FTE/18 Positions):** NIST requests an increase of $8 million to expand its critical efforts addressing the nation's supply chain challenges by providing U.S. industry, other agencies, and the research community with the tools required to build trustworthy and resilient domestic supply chains. With increased funding, NIST will develop technology solutions for: (1) ensuring cybersecurity and building trust in supply chains ($4 million); (2) verifying authenticity of components in domestic supply chains, including 5G systems ($2 million); and (3) advancing manufacturing technologies to enhance domestic production of critical goods and reduce reliance on critical minerals ($2 million). NIST's solutions would be developed in collaboration with relevant academic, government and private sector entities to address the needs of U.S. domestic manufacturers. Domestic innovation capacity is contingent on robust supply chains, both domestic and abroad; and U.S. competitiveness in manufacturing is dependent on trustworthy and resilient supply chains. Traditional cybersecurity approaches are "IT-centric" and fail to adequately measure and address operational technology system vulnerability. Advances in these areas will be needed for next generation high-efficiency data centers, medical applications, mobile communications, internet of things (IoT), and national defense. Methods for verifying authenticity of critical components in the domestic supply chain are also needed, to ensure their provenance and integrity. Resilient domestic supply chains can be reinforced with advanced manufacturing technologies that reduce reliance on critical minerals.

The requested funds will enable NIST to expand the National Initiative for Improving Cybersecurity in Supply Chains and support new public-private collaborations to provide practical solutions for software supply chain security at the National Cybersecurity Center of Excellence. NIST will advance technologies to detect security threats such as counterfeit components in 5G and other advanced communications devices and develop non-invasive tests to verify authenticity of parts and products in microelectronics. Using a circular economy approach to advanced manufacturing will reduce the need to extract, manufacture, and simply discard essential supply chain components like critical minerals. NIST will develop measurements and standards for qualifying and validating improved materials and processes that reduce reliance on critical minerals, lead to lower energy consumption, and have greater potential for extraction and reuse in the domestic supply chain.

The request increases NIST's investment in its Cybersecurity and Privacy portfolio by $4 million and increases NIST's investment in its Advanced Manufacturing and Material Measurements portfolio by $2 million. The request also increases NIST's investment in its Advanced Communications, Networks, and Scientific Data Systems portfolio by $2 million.

**Performance Measures:**

| | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|
| Number of standards or data methods and models developed | 2 | 2 | 2 | 2 | 2 |
| Number of standards of data methods and models transferred | | 1 | 1 | 1 | 1 |
| Additional NIST Additive Manufacturing Caucus industry members \ | 2% | 4% | 4% | 4% | 4% |

**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Measurement Science, Services, and Programs
Subactivity: Laboratory Programs
Program Change: Trustworthy and Resilient Domestic Supply Chains

| Full-time permanent | | | | | |
|---|---|---|---|---|---|
| Title | | Grade | Number | Annual Salary | Total Salaries |
| Software Engineer | | ZP V | 1 | 155,700 | 155,700 |
| Metrologists | | ZP IV | 1 | 132,368 | 132,368 |
| Software Engineer | | ZP III | 3 | 94,199 | 282,597 |
| IT Specialist (Security) | | ZP V | 1 | 155,700 | 155,700 |
| IT Specialist (Security) | | ZP IV | 2 | 132,368 | 264,736 |
| IT Specialist (Security) | | ZP III | 4 | 94,199 | 376,796 |
| Lead Scientist | | ZP V | 1 | 155,700 | 155,700 |
| Mechanical Engineer | | ZP IV | 2 | 132,368 | 264,736 |
| Computer Scientist | | ZP IV | 1 | 132,368 | 132,368 |
| Administrative/technical support | | ZA II | 2 | 71,531 | 143,062 |
| Total | | | 18 | | 2,063,763 |
| Less lapse | 25.00% | | (5) | | (515,941) |
| Total full-time permanent (FTE) | | | 13 | | 1,547,822 |
| 2024 pay Adjustment (5.2%) | | | | | 80,487 |
| | | | | | 1,628,309 |
| | | | | | |
| **Personnel Data Summary** | | | | | |
| Full-time Equivalent Employment (FTE) | | | | | |
| Full-time permanent | | | 13 | | |
| Part-time permanent | | | 0 | | |
| Full-time temporary | | | 0 | | |
| Part-time temporary | | | 0 | | |
| Total FTE | | | 13 | | |
| | | | | | |
| Authorized Positions | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Full-time permanent | | | 18 | | |
| Part-time permanent | | | 0 | | |
| Full-time temporary | | | 0 | | |
| Part-time temporary | | | 0 | | |
| Total Positions | | | 18 | | |
| | | | | | |

# Department of Commerce
# National Institute of Standards and Technology
# Scientific and Technical Research and Services
# PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Direct Obligations amounts in thousands)

Activity: Measurement Science, Services, and Programs
Subactivity: Laboratory Programs

| | Object Class | 2022 Actuals | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 11.1 | Full-time permanent compensation | 257,229 | 286,187 | 298,733 | 300,361 | 1,628 |
| 11.3 | Other than full-time permanent | 20,183 | 20,942 | 22,005 | 22,005 | 0 |
| 11.5 | Other personnel compensation | 6,794 | 9,990 | 10,943 | 10,943 | 0 |
| 11.8 | Special personnel services payments | 0 | 0 | 0 | 0 | 0 |
| 11.9 | Total personnel compensation | 284,206 | 317,119 | 331,681 | 333,309 | 1,628 |
| 12.1 | Civilian personnel benefits | 105,015 | 115,112 | 120,971 | 121,507 | 536 |
| 13 | Benefits for former personnel | 15 | 15 | 15 | 15 | 0 |
| 21 | Travel and transportation of persons | 5,738 | 9,295 | 9,270 | 9,312 | 42 |
| 22 | Transportation of things | 855 | 859 | 836 | 847 | 11 |
| 23 | Rent, communications, and utilities | 0 | 0 | 0 | 0 | 0 |
| 23.1 | Rental payments to GSA | 141 | 144 | 468 | 468 | 0 |
| 23.2 | Rental payments to others | 1,939 | 1,939 | 1,978 | 1,978 | 0 |
| 23.3 | Communications, utilities, and misc. charges | 13,253 | 20,738 | 18,643 | 19,474 | 831 |
| 24 | Printing and reproduction | 368 | 411 | 368 | 387 | 19 |
| 25 | Other contractual services | 0 | 0 | 0 | 0 | 0 |
| 25.1 | Advisory and assistance services | 3,026 | 3,026 | 3,086 | 3,086 | 0 |
| 25.2 | Other services from non-Federal sources | 56,756 | 134,182 | 57,534 | 59,111 | 1,577 |
| 25.3 | Other goods and services from Federal sources | 41,640 | 45,587 | 42,116 | 42,300 | 184 |
| 25.4 | Operation and maintenance of facilities | 0 | 0 | 0 | 0 | 0 |
| 25.5 | Research and development contracts | 27,677 | 30,679 | 28,334 | 28,354 | 20 |
| 25.6 | Medical care | 0 | 0 | 0 | 0 | 0 |
| 25.7 | Operation and maintenance of equipment | 15,763 | 17,890 | 17,399 | 17,480 | 81 |
| 25.8 | Subsistence and support of persons | 0 | 0 | 0 | 0 | 0 |
| 26 | Supplies and materials | 27,984 | 29,312 | 29,603 | 29,693 | 90 |
| 31 | Equipment | 36,329 | 41,852 | 42,573 | 43,054 | 481 |
| 32 | Lands and structures | 0 | 0 | 0 | 0 | 0 |
| 33 | Investments and loans | 0 | 0 | 0 | 0 | 0 |
| 41 | Grants, subsidies and contributions | 74,460 | 92,808 | 89,608 | 92,108 | 2,500 |
| 42 | Insurance claims and indemnities | 0 | 0 | 0 | 0 | 0 |
| 43 | Interest and dividends | 3 | 3 | 3 | 3 | 0 |
| 44 | Refunds | 0 | 0 | 0 | 0 | 0 |
| 99.9 | Total obligations | 695,168 | 860,971 | 794,486 | 802,486 | 8,000 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**PROGRAM CHANGES FOR 2024**
(Dollar amounts in thousands)

| | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Measurement Services Modernization | Pos/BA | 67 | $73,000 | 81 | $78,000 | 14 | $5,000 |
| | FTE/Obl. | 67 | 73,000 | 77 | 78,000 | 10 | 5,000 |

**Measurement Services Modernization (+$5,000, 10 FTE/14 Positions)** - NIST requests an increase of $5 million to invest in new instrumentation and laboratory infrastructure to support an enhanced measurement service delivery capability.

Measurement services are central to NIST's mission. Calibrations, proficiency testing, and producing the highest quality reference materials provide U.S. industry with the tools to increase productivity, minimize waste, and protect health and safety. The increase will target two areas: 1) platforms to accelerate rapid deployment of industry-needed reference materials, such as new cold storage and automated bioprocessing workflows for increasing measurement standards delivery to support the bioeconomy, and 2) expansion of efforts on foundational measurements for the next generation of devices for critical positioning, navigation, and timing (PNT) applications to reduce the risk of vulnerabilities within our dissemination system.

Research Grade Test Materials (RGTMs) allow for faster generation of NIST standards to meet critical industry measurement needs and maintain U.S. leadership in the face of intense global competition. RGTMs were critical in validating COVID-19 tests during the pandemic, with a SARS-CoV-2 RGTM able to be supplied in only 2 months – setting an example of what could be possible with increased support for this class of measurement standards. Without the needed RGTMs, the U.S. runs the risk of industry lacking confidence in new and unvalidated, drugs, therapeutics, and tests, slowing our response to evolving threats like pandemics and resulting in greater loss of life and corresponding adverse economic impacts. With this increase in funding, NIST will be better able to meet the demand for new, more complex reference materials to support the rapidly expanding bioeconomy as well as materials for emerging contaminants and advanced manufacturing including semiconductors. Building on new investments in FY 2023, $2 million of the increase will enable NIST to expand the infrastructure necessary to produce new RGTMs with a focus on the critical fields of bioscience food safety and semiconductors. This includes the development and deployment of RGTMs. When applicable, specific RGTMs will be further developed to become fully validated RMs or SRMs – reducing time to delivery of the most stringently documented measurement standards classes by years.

From the requested funding, $3 million will support calibrations for PNT systems. NIST calibrations in this area underpin global shipping, manufacturing, power grid, communications, transportation, finance, emergency response, and defense. With this funding NIST will develop new measurement innovations required for critical infrastructure and transferring the technology to U.S. industry. This includes investment to develop time and frequency measurements and frequency combs, enhancing NIST's ability to disseminate services for critical PNT applications.

The request increases NIST's investment in its Fundamental Measurement, Quantum Science, and Measurement Dissemination portfolio by $5 million.

Performance Measure:

| | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|
| Number of newly delivered RGTMs | | | | | |
| Performance Measures | | | | | |
| With increase | 1 | 10 | 30 | 30 | 30 |
| Without increase | 0 | 1 | 1 | 2 | 2 |
| Papers describing advanced measurement technologies for PNT dissemination | | | | | |
| With increase | 1 | 2 | 3 | 3 | 4 |
| Without increase | 0 | 1 | 1 | 1 | 1 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Measurement Science, Services, and Programs
Subactivity: Laboratory Programs
Program Change: Measurement Services Modernization

| Full-time permanent | | | | | |
|---|---|---|---|---|---|
| Title | | Grade | Number | Annual Salary | Total Salaries |
| Research Physicist | | ZP IV | 3 | 132,368 | 397,104 |
| Research Chemist | | ZP IV | 1 | 132,368 | 132,368 |
| Research Biologist | | ZP III | 1 | 94,199 | 94,199 |
| Engineering Technician | | ZT IV | 1 | 94,199 | 94,199 |
| Electrical Engineer | | ZP IV | 2 | 132,368 | 264,736 |
| Computer Scientist | | ZP IV | 2 | 132,368 | 264,736 |
| Computer Scientist | | ZP III | 1 | 94,199 | 94,199 |
| Administrative Specialist | | ZA III | 2 | 94,199 | 188,398 |
| Administrative/Technical Support | | ZA II | 1 | 71,531 | 71,531 |
| Total | | | 14 | | 1,601,470 |
| Less lapse | 25.00% | | (4) | | (400,368) |
| Total full-time permanent (FTE) | | | 10 | | 1,201,102 |
| 2024 pay Adjustment (5.2%) | | | | | 62,457 |
| | | | | | 1,263,559 |
| | | | | | |
| **Personnel Data Summary** | | | | | |
| Full-time Equivalent Employment (FTE) | | | | | |
| Full-time permanent | | | 10 | | |
| Part-time permanent | | | 0 | | |
| Full-time temporary | | | 0 | | |
| Part-time temporary | | | 0 | | |
| Total FTE | | | 10 | | |
| | | | | | |
| Authorized Positions | | | | | |
| Full-time permanent | | | 14 | | |

| | | | | | |
|---|---|---|---|---|---|
| Part-time permanent | | | 0 | | |
| Full-time temporary | | | 0 | | |
| Part-time temporary | | | 0 | | |
| Total Positions | | | 14 | | |
| | | | | | |

# Department of Commerce
# National Institute of Standards and Technology
# Scientific and Technical Research and Services
# PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Direct Obligations amounts in thousands)

Activity: Measurement Science, Services, and Programs
Subactivity: Laboratory Programs

| | Object Class | 2022 Actuals | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 11.1 | Full-time permanent compensation | 257,229 | 286,187 | 298,733 | 299,997 | 1,264 |
| 11.3 | Other than full-time permanent | 20,183 | 20,942 | 22,005 | 22,005 | 0 |
| 11.5 | Other personnel compensation | 6,794 | 9,990 | 10,943 | 10,943 | 0 |
| 11.8 | Special personnel services payments | 0 | 0 | 0 | 0 | 0 |
| 11.9 | Total personnel compensation | 284,206 | 317,119 | 331,681 | 332,945 | 1,264 |
| 12.1 | Civilian personnel benefits | 105,015 | 115,112 | 120,971 | 121,387 | 416 |
| 13 | Benefits for former personnel | 15 | 15 | 15 | 15 | 0 |
| 21 | Travel and transportation of persons | 5,738 | 9,295 | 9,270 | 9,298 | 28 |
| 22 | Transportation of things | 855 | 859 | 836 | 837 | 1 |
| 23 | Rent, communications, and utilities | 0 | 0 | 0 | 0 | 0 |
| 23.1 | Rental payments to GSA | 141 | 144 | 468 | 468 | 0 |
| 23.2 | Rental payments to others | 1,939 | 1,939 | 1,978 | 1,978 | 0 |
| 23.3 | Communications, utilities, and misc. charges | 13,253 | 20,738 | 18,643 | 19,167 | 524 |
| 24 | Printing and reproduction | 368 | 411 | 368 | 370 | 2 |
| 25 | Other contractual services | 0 | 0 | 0 | 0 | 0 |
| 25.1 | Advisory and assistance services | 3,026 | 3,026 | 3,086 | 3,086 | 0 |
| 25.2 | Other services from non-Federal sources | 56,756 | 134,182 | 57,534 | 58,966 | 1,432 |
| 25.3 | Other goods and services from Federal sources | 41,640 | 45,587 | 42,116 | 42,278 | 162 |
| 25.4 | Operation and maintenance of facilities | 0 | 0 | 0 | 0 | 0 |
| 25.5 | Research and development contracts | 27,677 | 30,679 | 28,334 | 28,334 | 0 |
| 25.6 | Medical care | 0 | 0 | 0 | 0 | 0 |
| 25.7 | Operation and maintenance of equipment | 15,763 | 17,890 | 17,399 | 17,722 | 323 |
| 25.8 | Subsistence and support of persons | 0 | 0 | 0 | 0 | 0 |
| 26 | Supplies and materials | 27,984 | 29,312 | 29,603 | 29,947 | 344 |
| 31 | Equipment | 36,329 | 41,852 | 42,573 | 43,077 | 504 |
| 32 | Lands and structures | 0 | 0 | 0 | 0 | 0 |
| 33 | Investments and loans | 0 | 0 | 0 | 0 | 0 |
| 41 | Grants, subsidies and contributions | 74,460 | 92,808 | 89,608 | 89,608 | 0 |
| 42 | Insurance claims and indemnities | 0 | 0 | 0 | 0 | 0 |
| 43 | Interest and dividends | 3 | 3 | 3 | 3 | 0 |
| 44 | Refunds | 0 | 0 | 0 | 0 | 0 |
| 99.9 | Total obligations | 695,168 | 860,971 | 794,486 | 799,486 | 5,000 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**PROGRAM CHANGES FOR 2024**
(Dollar amounts in thousands)

| | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| National Construction Safety Team Act Implementation | Pos/BA | 9 | $1,680 | 14 | $6,680 | 5 | $5,000 |
| | FTE/Obl. | 4 | 1,680 | 8 | 6,680 | 4 | 5,000 |

**National Construction Safety Team Act Implementation (+$5,000, 4 FTE/5 Positions)** - NIST requests an increase of $5 million to sustain and expand NIST's ability to support investigations under the National Construction Safety Team (NCST) Act of 2002. The NCST Act authorizes NIST to (a) conduct technical failure investigations of building failures that have significant loss of life or the potential for significant loss of life, (b) issue reports of findings with recommendations to reduce the likelihood of similar failures occurring in the future, (c) follow-up with recommendations through participation in consensus standards developing organizations, appropriate federal agencies, and improvements to engineering and professional practices, and (d) establish a federal advisory committee to provide advice to NIST regarding implementation of the NCST Act. With the requested funding NIST will be able to deploy investigative teams of experts with skills relevant to post-disaster building failure investigation. The new permanent staff will include engineers, social scientists, and those with dedicated administrative expertise, including procurement staff. This request would help to alleviate the need to redirect some, but not all, existing NIST technical staff away from their primary research and administrative functions and operations in order to prioritize the success of these critical investigations. With this additional funding, NIST would build institutional capacity for deployments and to begin, but not complete, new investigations. The increased capacity would include trained experts knowledgeable about how to collect and preserve physical and digital disaster evidence, conduct forensic material and structural tests, and conduct state-of-the-art computer modeling.

The request would help support anticipated costs for processes such as interviewing eyewitnesses and ensuring timely action on procurements and communications to the public and affected families. The addition of a few dedicated staff and some contractor support will provide some reduction in the delays and challenges inherent with reassigning existing staff, hiring needed staff, or adding additional collateral duties to existing staff. In the last five years, the NCST has considered investigating nearly 100 disasters, but has conducted less than a dozen preliminary reconnaissance missions and has launched only two NCST Investigations. The dedicated staff hired under this request will help build and maintain capacity to assist local, state, and federal partners in failure investigations, as needed, and advancing NIST's long-term research and standards efforts in resilient communities and built infrastructure. The visibility of NIST/NCST Investigations such as the World Trade Center (2001), Station Nightclub Fire (2003), Joplin Tornado (2011), and the ongoing investigations of Hurricane Maria in Puerto Rico and Champlain Towers South have increased the public expectations for a rigorous and timely investigation report, which this additional funding helps to address.

The request increases NIST's investment in its Physical Infrastructure and Resilience portfolio by $5 million.

**Performance Measure:** Number of procedures or protocols developed to promote innovative methods to cost-effectively ensure structural resilience of buildings and infrastructure.

| | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|
| With increase | 1 | 2 | 3 | 3 | 4 |
| Without increase | 0 | 1 | 1 | 2 | 3 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Measurement Science, Services, and Programs
Subactivity: Laboratory Programs
Program Change: National Construction Safety Team Act Implementation

| Full-time permanent | | | | | |
|---|---|---|---|---|---|
| Title | | Grade | Number | Annual Salary | Total Salaries |
| DFS Deputy Director | | ZP V | 1 | 155,700 | 155,700 |
| Forensic Engineering Staff | | ZP IV | 2 | 132,368 | 264,736 |
| Data Scientists | | ZP IV | 1 | 132,368 | 132,368 |
| Building Code Specialist | | ZP IV | 1 | 132,368 | 132,368 |
| Total | | | 5 | | 685,172 |
| Less lapse | 25.00% | | (1) | | (171,293) |
| Total full-time permanent (FTE) | | | 4 | | 513,879 |
| 2024 pay Adjustment (5.2%) | | | | | 26,722 |
| | | | | | 540,601 |
| | | | | | |
| **Personnel Data Summary** | | | | | |
| Full-time Equivalent Employment (FTE) | | | | | |
| Full-time permanent | | | 4 | | |
| Part-time permanent | | | 0 | | |
| Full-time temporary | | | 0 | | |
| Part-time temporary | | | 0 | | |
| Total FTE | | | 4 | | |
| | | | | | |
| Authorized Positions | | | | | |
| Full-time permanent | | | 5 | | |
| Part-time permanent | | | 0 | | |
| Full-time temporary | | | 0 | | |
| Part-time temporary | | | 0 | | |
| Total Positions | | | 5 | | |
| | | | | | |

# Department of Commerce
# National Institute of Standards and Technology
# Scientific and Technical Research and Services
# PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Direct Obligations amounts in thousands)

Activity: Measurement Science, Services, and Programs
Subactivity: Laboratory Programs

| | Object Class | 2022 Actuals | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 11.1 | Full-time permanent compensation | 257,229 | 286,187 | 298,733 | 299,274 | 541 |
| 11.3 | Other than full-time permanent | 20,183 | 20,942 | 22,005 | 22,005 | 0 |
| 11.5 | Other personnel compensation | 6,794 | 9,990 | 10,943 | 10,943 | 0 |
| 11.8 | Special personnel services payments | 0 | 0 | 0 | 0 | 0 |
| 11.9 | Total personnel compensation | 284,206 | 317,119 | 331,681 | 332,222 | 541 |
| 12.1 | Civilian personnel benefits | 105,015 | 115,112 | 120,971 | 121,149 | 178 |
| 13 | Benefits for former personnel | 15 | 15 | 15 | 15 | 0 |
| 21 | Travel and transportation of persons | 5,738 | 9,295 | 9,270 | 9,305 | 35 |
| 22 | Transportation of things | 855 | 859 | 836 | 847 | 11 |
| 23 | Rent, communications, and utilities | 0 | 0 | 0 | 0 | 0 |
| 23.1 | Rental payments to GSA | 141 | 144 | 468 | 468 | 0 |
| 23.2 | Rental payments to others | 1,939 | 1,939 | 1,978 | 1,978 | 0 |
| 23.3 | Communications, utilities, and misc. charges | 13,253 | 20,738 | 18,643 | 19,218 | 575 |
| 24 | Printing and reproduction | 368 | 411 | 368 | 386 | 18 |
| 25 | Other contractual services | 0 | 0 | 0 | 0 | 0 |
| 25.1 | Advisory and assistance services | 3,026 | 3,026 | 3,086 | 3,086 | 0 |
| 25.2 | Other services from non-Federal sources | 56,756 | 134,182 | 57,534 | 58,683 | 1,149 |
| 25.3 | Other goods and services from Federal sources | 41,640 | 45,587 | 42,116 | 42,253 | 137 |
| 25.4 | Operation and maintenance of facilities | 0 | 0 | 0 | 0 | 0 |
| 25.5 | Research and development contracts | 27,677 | 30,679 | 28,334 | 29,665 | 1,331 |
| 25.6 | Medical care | 0 | 0 | 0 | 0 | 0 |
| 25.7 | Operation and maintenance of equipment | 15,763 | 17,890 | 17,399 | 17,456 | 57 |
| 25.8 | Subsistence and support of persons | 0 | 0 | 0 | 0 | 0 |
| 26 | Supplies and materials | 27,984 | 29,312 | 29,603 | 29,670 | 67 |
| 31 | Equipment | 36,329 | 41,852 | 42,573 | 43,474 | 901 |
| 32 | Lands and structures | 0 | 0 | 0 | 0 | 0 |
| 33 | Investments and loans | 0 | 0 | 0 | 0 | 0 |
| 41 | Grants, subsidies and contributions | 74,460 | 92,808 | 89,608 | 89,608 | 0 |
| 42 | Insurance claims and indemnities | 0 | 0 | 0 | 0 | 0 |
| 43 | Interest and dividends | 3 | 3 | 3 | 3 | 0 |
| 44 | Refunds | 0 | 0 | 0 | 0 | 0 |
| 99.9 | Total obligations | 695,168 | 860,971 | 794,486 | 799,486 | 5,000 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**PROGRAM CHANGES FOR 2024**
(Dollar amounts in thousands)

| | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| NCNR Advanced Research Instrumentation | Pos/BA | 161 | $68,900 | 168 | $71,900 | 7 | $3,000 |
| | FTE/Obl. | 161 | 68,900 | 166 | 71,900 | 5 | 3,000 |

**NCNR Advanced Research Instrumentation (+$3,000, 5 FTE/7 Positions)** - NIST requests an increase of $3 million to support the development and operation of innovative advanced neutron measurement instrumentation to ensure that the NIST Center for Neutron Research (NCNR) remains a world-class user facility. The NCNR is a unique and valuable user facility that provides U.S. scientists with access to cutting-edge expertise and capabilities to perform innovative research beyond the reach of the user's own laboratory. The NCNR features world-class neutron instrumentation and expertise in the development and application of neutron measurement technologies. New and improved capabilities will further enhance the Nation's scientific infrastructure leading to advances in a wide variety of technologies that promise to improve the quality of life for all Americans. Areas in which neutron science plays an essential role include biopharmaceuticals, advanced polymers, energy technologies, chemical production and separation, quantum technologies, and advanced materials such as those produced through additive manufacturing. The success of users of large-scale scientific infrastructure such as the NCNR depends critically on the facility providing robust support before, during, and after their experiment. By adding seven scientific staff to directly serve the U.S. scientific community, this initiative will enhance the efficiency and the scientific productivity of the NCNR. NIST will also provide new equipment for placing materials under extreme environments such as those present during industrial processing and instrumentation that will allow users to characterize more accurately their samples immediately before placing them in a neutron beam. These upgrades will benefit many of the over 2,000 researchers from more than 40 states who participate in the research activities of the facility each year.

The request increases NIST's investment in its User Facilities portfolio by $3.0 million.

**Performance Measure:** Number of additional researchers served

| | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|
| With increase | 0 | 0 | 100 | 200 | 300 |
| Without increase | 0 | 0 | 0 | 0 | 0 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Measurement Science, Services, and Programs
Subactivity: Laboratory Programs
Program Change: NCNR Advanced Research Instrumentation

| Full-time permanent | | | | | |
|---|---|---|---|---|---|
| Title | | Grade | Number | Annual Salary | Total Salaries |
| Physicist | | ZP V | 2 | $155,700 | $311,400 |
| Physicist | | ZP IV | 3 | 132,368 | 397,104 |
| Physicist | | ZP III | 2 | 94,199 | 188,398 |
| | | | | | |
| Subtotal | | | 7 | | 896,902 |
| Less lapse | 25.00% | | (2) | | (224,226) |
| Total full-time permanent (FTE) | | | 5 | | 672,676 |
| 2024 pay Adjustment (5.2%) | | | | | 34,979 |
| Total | | | | | $707,655 |
| | | | | | |
| **Personnel Data Summary** | | | | | |
| Full-time Equivalent Employment (FTE) | | | | | |
| Full-time permanent | | | 5 | | |
| Part-time permanent | | | 0 | | |
| Full-time temporary | | | 0 | | |
| Part-time temporary | | | 0 | | |
| Total FTE | | | 5 | | |
| | | | | | |
| Authorized Positions | | | | | |
| Full-time permanent | | | 7 | | |
| Part-time permanent | | | 0 | | |
| Full-time temporary | | | 0 | | |
| Part-time temporary | | | 0 | | |
| Total Positions | | | 7 | | |
| | | | | | |

# Department of Commerce
# National Institute of Standards and Technology
# Scientific and Technical Research and Services
# PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Direct Obligations amounts in thousands)

Activity: Measurement Science, Services, and Programs
Subactivity: Laboratory Programs

| | Object Class | 2022 Actuals | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 11.1 | Full-time permanent compensation | $257,229 | $286,187 | $298,733 | $299,441 | $708 |
| 11.3 | Other than full-time permanent | 20,183 | 20,942 | 22,005 | 22,005 | 0 |
| 11.5 | Other personnel compensation | 6,794 | 9,990 | 10,943 | 10,943 | 0 |
| 11.8 | Special personnel services payments | 0 | 0 | 0 | 0 | 0 |
| 11.9 | Total personnel compensation | 284,206 | 317,119 | 331,681 | 332,389 | 708 |
| 12.1 | Civilian personnel benefits | 105,015 | 115,112 | 120,971 | 121,204 | 233 |
| 13 | Benefits for former personnel | 15 | 15 | 15 | 15 | 0 |
| 21 | Travel and transportation of persons | 5,738 | 9,295 | 9,270 | 9,289 | 19 |
| 22 | Transportation of things | 855 | 859 | 836 | 847 | 11 |
| 23 | Rent, communications, and utilities | 0 | 0 | 0 | 0 | 0 |
| 23.1 | Rental payments to GSA | 141 | 144 | 468 | 468 | 0 |
| 23.2 | Rental payments to others | 1,939 | 1,939 | 1,978 | 1,978 | 0 |
| 23.3 | Communications, utilities, and misc. charges | 13,253 | 20,738 | 18,643 | 18,972 | 329 |
| 24 | Printing and reproduction | 368 | 411 | 368 | 380 | 12 |
| 25 | Other contractual services | 0 | 0 | 0 | 0 | 0 |
| 25.1 | Advisory and assistance services | 3,026 | 3,026 | 3,086 | 3,086 | 0 |
| 25.2 | Other services from non-Federal sources | 56,756 | 134,182 | 57,534 | 58,168 | 634 |
| 25.3 | Other goods and services from Federal sources | 41,640 | 45,587 | 42,116 | 42,194 | 78 |
| 25.4 | Operation and maintenance of facilities | 0 | 0 | 0 | 0 | 0 |
| 25.5 | Research and development contracts | 27,677 | 30,679 | 28,334 | 28,684 | 350 |
| 25.6 | Medical care | 0 | 0 | 0 | 0 | 0 |
| 25.7 | Operation and maintenance of equipment | 15,763 | 17,890 | 17,399 | 17,430 | 31 |
| 25.8 | Subsistence and support of persons | 0 | 0 | 0 | 0 | 0 |
| 26 | Supplies and materials | 27,984 | 29,312 | 29,603 | 29,680 | 77 |
| 31 | Equipment | 36,329 | 41,852 | 42,573 | 43,091 | 518 |
| 32 | Lands and structures | 0 | 0 | 0 | 0 | 0 |
| 33 | Investments and loans | 0 | 0 | 0 | 0 | 0 |
| 41 | Grants, subsidies and contributions | 74,460 | 92,808 | 89,608 | 89,608 | 0 |
| 42 | Insurance claims and indemnities | 0 | 0 | 0 | 0 | 0 |
| 43 | Interest and dividends | 3 | 3 | 3 | 3 | 0 |
| 44 | Refunds | 0 | 0 | 0 | 0 | 0 |
| 99.9 | Total obligations | $695,168 | $860,971 | $794,486 | $797,486 | $3,000 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**PROGRAM CHANGES FOR 2024**
(Dollar amounts in thousands)

| | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| NIST Diversity, Equity, Inclusion and Accessibility (DEIA) Initiatives | Pos/BA | 22 | $13,980 | 25 | $16,217 | 3 | $2,237 |
| | FTE/Obl. | 22 | 13,980 | 24 | 16,217 | 2 | 2,237 |

**NIST Diversity, Equity, Inclusion and Accessibility (DEIA) Initiatives (+$2,237, 2FTE/3 Positions)** - NIST requests an increase of $2.237 million to support the priorities identified in the NIST DEIA Strategic Plan including strategic STEM partnerships with minority serving institutions, and targeted STEM recruitment and retention strategies. NIST will assess and update as needed the policies, processes, programs, and practices to foster a more inclusive work environment and experience for NIST staff. Increasingly, industries are in demand of a highly skilled science and engineering workforce; this request will build and train the scientific workforce in the U.S. With increasing global competition and heightened national security concerns, it is even more critical to invest in the pipeline that will nurture the talent required to maintain U.S. leadership in areas like quantum science, artificial intelligence, biotechnology, advanced communications, and cybersecurity. NIST will partner with organizations that have existing educational outreach programs to encourage more interest in NIST and to increase early interest in STEM careers. Additionally, with a predicted deficit of workers entering the sciences despite the elevated needs, NIST will expand STEM recruitment strategies. NIST will develop a mechanism and support structure to recruit and re-train its STEM workforce, with an emphasis on those who have taken a pause in their career for various reasons (caregiving, COVID pandemic, etc.) and want to reenter the workforce. This population has workforce experience and can reintegrate quickly if given the appropriate support to help them succeed in an environment that has changed since they were last working. This untapped population could bolster the workforce in a time when the recruitment of talent is highly competitive. NIST will also build on investments from FY 2023 to expand partnerships with minority-serving institutions (MSIs; including, for example, Historically Black Colleges and Universities, Hispanic-Serving Institutions, and Tribal Colleges and Universities), and support development of a well-rounded, diverse workforce and new pipelines for the next generation of innovative scientists and engineers. This investment will help improve diversity, inclusion, and equity in STEM careers and leverage MSIs, a major focus in the U.S. for at least the last decade. Without initiatives that support diverse populations, the U.S. could unequivocally be missing out on potential talent. The request funds up to $2.237 million per year in FTEs and contracts to expand the current NIST recruitment and pipeline building programs will create new opportunities for underserved groups and increase the pipeline for NIST and industry.

The request increases NIST's investment in its Exploratory Research portfolio by $2.237 million.

**Performance Measure:** Cumulative number of engagements and recruitments with underserved communities

| | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|
| With funding | 8 | 24 | 32 | 40 | 48 |
| Without funding | 3 | 3 | 3 | 3 | 3 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Measurement Science, Services, and Programs
Subactivity: Laboratory Programs
Program Change: NIST Diversity, Equity, Inclusion and Accessibility (DEIA) Initiatives

| Full-time permanent | | | | | |
|---|---|---|---|---|---|
| Title | | Grade | Number | Annual Salary | Total Salaries |
| Program Manager | | ZA IV | 1 | $132,368 | $132,368 |
| DEI Specialist | | ZP IV | 1 | 132,368 | 132,368 |
| Program Manager | | ZA III | 1 | 94,199 | 94,199 |
| Total | | | 3 | | 358,935 |
| Less Lapse: | | | (1) | | (89,734) |
| Total full-time permanent (FTE) | | | 2 | | 269,201 |
| 2024 pay Adjustment (5.2%) | | | | | 13,998 |
| Total | | | | | $283,199 |
| | | | | | |
| **Personnel Data Summary** | | | | | |
| Full-time Equivalent Employment (FTE) | | | | | |
| Full-time permanent | | | 2 | | |
| Part-time permanent | | | 0 | | |
| Full-time temporary | | | 0 | | |
| Part-time temporary | | | 0 | | |
| Total FTE | | | 2 | | |
| | | | | | |
| | | | | | |
| Authorized Positions | | | | | |
| Full-time permanent | | | 3 | | |
| Part-time permanent | | | 0 | | |
| Full-time temporary | | | 0 | | |
| Part-time temporary | | | 0 | | |
| Total Positions | | | 3 | | |

# Department of Commerce
# National Institute of Standards and Technology
# Scientific and Technical Research and Services
# PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Direct Obligations amounts in thousands)

Activity: Measurement Science, Services, and Programs
Subactivity: Laboratory Programs

| | Object Class | 2022 Actuals | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 11.1 | Full-time permanent compensation | $257,229 | $286,187 | $298,733 | $299,016 | $283 |
| 11.3 | Other than full-time permanent | 20,183 | 20,942 | 22,005 | 22,005 | 0 |
| 11.5 | Other personnel compensation | 6,794 | 9,990 | 10,943 | 10,943 | 0 |
| 11.8 | Special personnel services payments | 0 | 0 | 0 | 0 | 0 |
| 11.9 | Total personnel compensation | 284,206 | 317,119 | 331,681 | 331,964 | 283 |
| 12.1 | Civilian personnel benefits | 105,015 | 115,112 | 120,971 | 121,064 | 93 |
| 13 | Benefits for former personnel | 15 | 15 | 15 | 15 | 0 |
| 21 | Travel and transportation of persons | 5,738 | 9,295 | 9,270 | 9,278 | 8 |
| 22 | Transportation of things | 855 | 859 | 836 | 837 | 1 |
| 23 | Rent, communications, and utilities | 0 | 0 | 0 | 0 | 0 |
| 23.1 | Rental payments to GSA | 141 | 144 | 468 | 468 | 0 |
| 23.2 | Rental payments to others | 1,939 | 1,939 | 1,978 | 1,978 | 0 |
| 23.3 | Communications, utilities, and misc. charges | 13,253 | 20,738 | 18,643 | 18,888 | 245 |
| 24 | Printing and reproduction | 368 | 411 | 368 | 371 | 3 |
| 25 | Other contractual services | 0 | 0 | 0 | 0 | 0 |
| 25.1 | Advisory and assistance services | 3,026 | 3,026 | 3,086 | 3,086 | 0 |
| 25.2 | Other services from non-Federal sources | 56,756 | 134,182 | 57,534 | 58,282 | 748 |
| 25.3 | Other goods and services from Federal sources | 41,640 | 45,587 | 42,116 | 42,159 | 43 |
| 25.4 | Operation and maintenance of facilities | 0 | 0 | 0 | 0 | 0 |
| 25.5 | Research and development contracts | 27,677 | 30,679 | 28,334 | 28,334 | 0 |
| 25.6 | Medical care | 0 | 0 | 0 | 0 | 0 |
| 25.7 | Operation and maintenance of equipment | 15,763 | 17,890 | 17,399 | 17,422 | 23 |
| 25.8 | Subsistence and support of persons | 0 | 0 | 0 | 0 | 0 |
| 26 | Supplies and materials | 27,984 | 29,312 | 29,603 | 29,627 | 24 |
| 31 | Equipment | 36,329 | 41,852 | 42,573 | 42,589 | 16 |
| 32 | Lands and structures | 0 | 0 | 0 | 0 | 0 |
| 33 | Investments and loans | 0 | 0 | 0 | 0 | 0 |
| 41 | Grants, subsidies and contributions | 74,460 | 92,808 | 89,608 | 90,358 | 750 |
| 42 | Insurance claims and indemnities | 0 | 0 | 0 | 0 | 0 |
| 43 | Interest and dividends | 3 | 3 | 3 | 3 | 0 |
| 44 | Refunds | 0 | 0 | 0 | 0 | 0 |
| 99.9 | Total obligations | $695,168 | $860,971 | $794,486 | $796,723 | $2,237 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**PROGRAM CHANGES FOR 2024**
(Dollar amounts in thousands)

| | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Climate Change and Environmental Sustainability | Pos/BA | 184 | $92,128 | 187 | $94,128 | 3 | $2,000 |
| | FTE/Obl. | 184 | 92,128 | 186 | 94,128 | 2 | 2,000 |

**Climate Change and Environmental Sustainability (+$2,000, 2 FTE/3 Positions)** - NIST requests an increase of $2 million to enable NIST laboratories to develop underpinning metrology and standards to enable quantification of carbon dioxide removal from natural-based sources, including agriculture, oceans, forests, coastal regions, wetlands, and lakes; and develop a comprehensive approach for ensuring the accuracy and trustworthiness of data used in carbon accounting from both man-made and natural sources. This request increases funds for the Laboratory Programs portion of the same initiative under the Standards Coordination and Special Programs (SCO-SPO).New approaches and technologies can reduce the impact of carbon in the environment, while improving our quality of life. These approaches include Direct Air Capture, as well as other innovative solutions (e.g., biological engineering) that maximize natural sources and sinks present in agriculture, oceans, forests, coastal regions, wetlands, and lakes. NIST will use the $2 million to expand its efforts investigating different strategies for carbon dioxide removal, including the development of key metrology and standards to quantify the effectiveness of emerging nature-based solutions. Working in partnership with other federal agencies including NOAA, NASA, and EPA, these NIST-developed measurement tools and standards will underpin carbon accounting and trade and will enable the development of a comprehensive approach for ensuring accuracy and trustworthiness of carbon data.

The request increases NIST's investment in its Fundamental Measurement, Quantum Science, and Measurement Dissemination portfolio by $2 million.

Performance Measure:

| | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|
| Performance Measures | | | | | |
| Number of new reports and innovative methods that reduce the impact of carbon in the environment. | | | | | |
| With increase | 2 | 6 | 8 | 12 | 16 |
| Without increase | 1 | 2 | 3 | 3 | 4 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Measurement Science, Services, and Programs
Subactivity: Laboratory Programs
Program Change: Climate Change and Environmental Sustainability

| Full-time permanent | | | | | |
|---|---|---|---|---|---|
| Title | | Grade | Number | Annual Salary | Total Salaries |
| Physicist | | ZP IV | 1 | 132,368 | 132,368 |
| Material Scientist | | ZP IV | 1 | 132,368 | 132,368 |
| Physical Scientist | | ZP IV | 1 | 132,368 | 132,368 |
| Total | | | 3 | | 397,104 |
| Less lapse | 25.00% | | (1) | | (99,276) |
| Total full-time permanent (FTE) | | | 2 | | 297,828 |
| 2024 pay Adjustment (5.2%) | | | | | 15,487 |
| | | | | | 313,315 |
| | | | | | |
| **Personnel Data Summary** | | | | | |
| Full-time Equivalent Employment (FTE) | | | | | |
| Full-time permanent | | | 2 | | |
| Part-time permanent | | | 0 | | |
| Full-time temporary | | | 0 | | |
| Part-time temporary | | | 0 | | |
| Total FTE | | | 2 | | |
| | | | | | |
| Authorized Positions | | | | | |
| Full-time permanent | | | 3 | | |
| Part-time permanent | | | 0 | | |
| Full-time temporary | | | 0 | | |
| Part-time temporary | | | 0 | | |
| Total Positions | | | 3 | | |

# Department of Commerce
# National Institute of Standards and Technology
# Scientific and Technical Research and Services
# PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Direct Obligations amounts in thousands)

Activity: Measurement Science, Services, and Programs
Subactivity: Laboratory Programs

| | Object Class | 2022 Actuals | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 11.1 | Full-time permanent compensation | 257,229 | 286,187 | 298,733 | 299,046 | 313 |
| 11.3 | Other than full-time permanent | 20,183 | 20,942 | 22,005 | 22,005 | 0 |
| 11.5 | Other personnel compensation | 6,794 | 9,990 | 10,943 | 10,943 | 0 |
| 11.8 | Special personnel services payments | 0 | 0 | 0 | 0 | 0 |
| 11.9 | Total personnel compensation | 284,206 | 317,119 | 331,681 | 331,994 | 313 |
| 12.1 | Civilian personnel benefits | 105,015 | 115,112 | 120,971 | 121,074 | 103 |
| 13 | Benefits for former personnel | 15 | 15 | 15 | 15 | 0 |
| 21 | Travel and transportation of persons | 5,738 | 9,295 | 9,270 | 9,286 | 16 |
| 22 | Transportation of things | 855 | 859 | 836 | 836 | 0 |
| 23 | Rent, communications, and utilities | 0 | 0 | 0 | 0 | 0 |
| 23.1 | Rental payments to GSA | 141 | 144 | 468 | 468 | 0 |
| 23.2 | Rental payments to others | 1,939 | 1,939 | 1,978 | 1,978 | 0 |
| 23.3 | Communications, utilities, and misc. charges | 13,253 | 20,738 | 18,643 | 18,867 | 224 |
| 24 | Printing and reproduction | 368 | 411 | 368 | 374 | 6 |
| 25 | Other contractual services | 0 | 0 | 0 | 0 | 0 |
| 25.1 | Advisory and assistance services | 3,026 | 3,026 | 3,086 | 3,086 | 0 |
| 25.2 | Other services from non-Federal sources | 56,756 | 134,182 | 57,534 | 57,691 | 157 |
| 25.3 | Other goods and services from Federal sources | 41,640 | 45,587 | 42,116 | 42,185 | 69 |
| 25.4 | Operation and maintenance of facilities | 0 | 0 | 0 | 0 | 0 |
| 25.5 | Research and development contracts | 27,677 | 30,679 | 28,334 | 28,334 | 0 |
| 25.6 | Medical care | 0 | 0 | 0 | 0 | 0 |
| 25.7 | Operation and maintenance of equipment | 15,763 | 17,890 | 17,399 | 17,430 | 31 |
| 25.8 | Subsistence and support of persons | 0 | 0 | 0 | 0 | 0 |
| 26 | Supplies and materials | 27,984 | 29,312 | 29,603 | 29,672 | 69 |
| 31 | Equipment | 36,329 | 41,852 | 42,573 | 42,985 | 412 |
| 32 | Lands and structures | 0 | 0 | 0 | 0 | 0 |
| 33 | Investments and loans | 0 | 0 | 0 | 0 | 0 |
| 41 | Grants, subsidies and contributions | 74,460 | 92,808 | 89,608 | 90,208 | 600 |
| 42 | Insurance claims and indemnities | 0 | 0 | 0 | 0 | 0 |
| 43 | Interest and dividends | 3 | 3 | 3 | 3 | 0 |
| 44 | Refunds | 0 | 0 | 0 | 0 | 0 |
| 99.9 | Total obligations | 695,168 | 860,971 | 794,486 | 796,486 | 2,000 |

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**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS**
(Dollar amounts in thousands)

Activity: Measurement Science, Services, and Programs
Subactivity: Corporate Services

| Line Item | | 2022 Actual | | 2023 Enacted | | 2024 Base | | 2024 Estimate | | Increase/Decrease over 2024 Base | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Corporate Services | Pos./Approp | 30 | $17,460 | 30 | $17,460 | 30 | $19,053 | 30 | $19,053 | 0 | 0 |
| | FTE/Obl. | 27 | 17,457 | 29 | 17,497 | 29 | 19,053 | 29 | 19,053 | 0 | 0 |
| **Total** | Pos./Approp | 30 | 17,460 | 30 | 17,460 | 30 | 19,053 | 30 | 19,053 | 0 | 0 |
| | FTE/Obl. | 27 | 17,457 | 29 | 17,497 | 29 | 19,053 | 29 | 19,053 | 0 | 0 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**JUSTIFICATION OF PROGRAM AND PERFORMANCE**
(Dollar amounts in thousands)

Activity: Measurement Science, Services, and Programs
Subactivity: Corporate Services

## Goal Statement

The goal of the Corporate Services program is to support NIST's mission to deliver world-class measurement science, standards, and technology to our stakeholders in industry, academia, and government to drive technological innovation that strengthens the economic and industrial competitiveness of the United States and improves our quality of life.

## Base Program

This program includes the NIST central information technology (IT) support for NIST's mission programs and operations providing secure, centrally managed IT infrastructure resources leading to improved measurement methods, standards advancements, reference data, and research results benefiting numerous sectors of the U.S. economy. This program also provides the resources to operate and maintain administrative and financial management systems for NIST that satisfy the requirements established by the Department of Commerce (DOC), Office of Management and Budget, Government Accountability Office, Department of Treasury, and Congress.

## Statement of Operating Objectives

In FY 2024, the Corporate Services will focus on the following items:

- Establish new remote connection capabilities to promote migration to zero-trust architecture;
- Continue to incrementally invest in the network backbone upgrades for enhanced high-speed network enabling NIST's leading edge research;
- Install higher-capacity IT infrastructure equipment to address challenges created by managing equipment nearing end-of-life; and
- Maintain and deliver reliable financial, acquisition, and administrative systems to assist NIST users in processing mission-related transactions, while striving to streamline business processes and improve transparency.

## Explanation and Justification

| Line Item | | 2022 Actual | | 2023 Enacted | | 2024 Base | |
|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Corporate Services | Pos./BA | 30 | $17,460 | 30 | $17,460 | 30 | $19,053 |
| | FTE/Obl | 27 | 17,457 | 29 | 17,497 | 29 | 19,053 |

Corporate Services (Total Funding: $19.1 million and 30 Positions)

Computer Support - This effort ensures that NIST's IT infrastructure provides the fundamental backbone for requirements associated with NIST's scientific and technical leadership. NIST maintains an IT Infrastructure Roadmap that defines a phased, prioritized approach for upgrading the network/computing environments, and maintaining performance consistent with NIST mission requirements. This roadmap addresses the following critical issues:

- Building a research network that enables the transfer the volumes of data consistent with speed and accuracy necessary to support NIST's mission to advance American corporate leadership;
- Ensuring reliable network availability and capability to support the hybrid workforce's use of advanced web collaboration tools and VoIP (Voice over IP) technologies; and
- Upgrading network and network security infrastructure so that NIST services can be migrated to cloud infrastructure.

Business Systems - The DOC is undertaking a major multi-year consolidation and modernization initiative of multiple business systems, functions, and processes and has entered into a long-term contract to implement a flexible system to support the management of financial, procurement, travel, grants, property, and other administrative functions called Business Applications Solution (BAS). NIST's business systems are an integral part of DOC's vision for consolidation and modernization. NIST has representatives participating in all facets of BAS's implementation (property, acquisitions, and core financial system). NIST supports DOC's effort to pursue a modernized Grants Management solution and continues to provide input to the DOC/Office of the Chief Information Officer's Grants Enterprise Management System effort. These efforts are undertaken while supporting NIST's current Commerce Business Systems.

The base funding requested of $19.1 million for Corporate Services supports the following ongoing mission functions and programmatic areas that are also described in more detail in the Laboratory Programs section of this budget request:

- Exploratory Measurement Science ($2.0 million)
- Advanced Manufacturing and Material Measurements ($3.4 million)
- Fundamental Measurement, Quantum Science, and Measurement Dissemination ($6.2 million)
- Advanced Communications, Networks, and Scientific Data Systems ($1.5 million)

- Cybersecurity and Privacy ($2.0 million)
- Health and Biological Systems Measurements ($0.9 million)
- Physical Infrastructure and Resilience ($1.7 million)
- User Facilities ($1.4 million)

**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS**
(Dollar amounts in thousands)

Activity: Measurement Science, Services, and Programs
Subactivity: Standards Coordination and Special Programs *

| Line Item | | 2022 Actual | | 2023 Enacted | | 2024 Base | | 2024 Estimate | | Increase/Decrease over 2024 Base | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Standards Coordination and Special Programs | Pos./Approp | 217 | $89,175 | 244 | $109,675 | 244 | $112,683 | 249 | $116,172 | 5 | $3,489 |
| | FTE/Obl. | 193 | 84,079 | 228 | 126,105 | 234 | 112,683 | 238 | 117,672 | 4 | 4,989 |
| External projects | Pos./Approp | 0 | 37,598 | 0 | 62,532 | 0 | 62,532 | 0 | 0 | 0 | (62,532) |
| | FTE/Obl. | 0 | 36,398 | 0 | 63,732 | 0 | 62,532 | 0 | 0 | 0 | (62,532) |
| **Total** | Pos./Approp | 217 | 126,773 | 244 | 172,207 | 244 | 175,215 | 249 | 116,172 | 5 | (59,043) |
| | FTE/Obl. | 193 | 120,477 | 228 | 189,837 | 234 | 175,215 | 238 | 117,672 | 4 | (57,543) |

* Includes Baldrige Performance Excellence Program (BPEP) funded at $2.5M in FY 2022, requested at $2.7M in FY 2023 and $2.9M in FY 2024.

**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific Technical Research Services**
**JUSTIFICATION OF PROGRAM AND PERFORMANCE**
(Dollar amounts in thousands)

Activity: Measurement Science, Services, and Programs
Subactivity: Standards Coordination and Special Programs

## Goal Statement

The primary goal of the Standards Coordination and Special Programs is to provide for NIST functions in both the management of cross-cutting laboratory research programs, and NIST's engagement in standards policy, and documentary standards development.

## Base Program

Standards Coordination and Special Programs house cross-cutting NIST activities managed by the Associate Director for Laboratory Programs (ADLP) that deal with select R&D programs, documentary standards coordination, and policy development.

1. The Special Programs Office (SPO) plans and manages high-profile programs that span the mission and expertise of multiple NIST laboratories to address critical national needs. To meet these needs, SPO works with and forges partnerships among government, private industry, academia, and professional organizations to provide world-class leadership in advanced measurement science, science-based standards, and data-driven technology innovations. SPO actively fosters communication and collaboration between NIST and external stakeholder communities, as well as agile collaboration across organizational boundaries at NIST. SPO's portfolio of programs includes the Greenhouse Gas (GHG) Measurements Program, the Forensic Science Program, the Open Data Program, and other programs designated by the ADLP.

    - The NIST GHG Measurements Program develops advanced tools and standards to accurately map and measure GHG emissions, so industries and governments have the information they need to manage emissions reduction actions effectively. The GHG program operates a series of testbeds to advance measuring and monitoring of GHG emissions, and conducts research to increase accuracy and confidence in emissions flux quantification for both sources and sinks in multiple research areas, including: 1) stationary GHG emission sources, 2) measurement tools combining process-oriented emissions models with advanced atmospheric observations and analyses to better characterize GHG emission and uptake fluxes in metropolitan and urban areas, 3) measurements characterizing urban vegetative emissions and uptake, and 4) advancing accurate remote sensing of GHG concentrations in Earth systems.

- The NIST Forensic Science Program is working to strengthen forensic practice through research and improved standards, conducting research in several forensic disciplines, including digital evidence, forensic genetics, biometrics, firearms and toolmarks, drugs and toxins, statistics, trace analysis, forensic algorithms and data, and quality assurance (which includes interlaboratory studies and proficiency testing). NIST provides physical reference standards and data that help forensic laboratories validate their analytical methods and ensure accurate test results. The program also supports the Center for Statistics and Applications in Forensic Evidence (CSAFE), one of three *NIST Center of Excellence*, which is working to develop new statistical methods for use in pattern and digital evidence examination.

- The NIST Open Data Program facilitates the development and integration of advanced data science and engineering methods across the data lifecycle in areas including data management, data sharing, data interoperability, and data analytics. The Open Data Program coordinates development of infrastructure, workflows, policies, and procedures for providing public access to the result of NIST-funded research that takes the form of publications, data, and code, as well as other mission, administrative, and operational data.

2. The Standards Coordination Office (SCO) advises NIST leadership on policy and strategy as they relate to NIST's statutory role and responsibilities in standardization and serves as a normative standards and conformity assessment related multi-functional resource for NIST and U.S. government staff. The primary work areas of the SCO are highlighted below.

   - Standards Coordination: Standards effectively expedite trade and stimulate economic growth when they are developed, maintained, and applied in accordance with national policy, processes, and procedures. NIST provides guidance, training, information, and assistance so that companies, government agencies, standards bodies, and others can successfully work together on essential standardization and conformity assessment activities.

   - Standards Policy: The U.S. government's role in the development and use of standards and conformity assessment is guided by the National Technology Transfer and Advancement Act of 1995 (P.L. 104-113), OMB Circular A-119, and other Federal laws, regulations, and international agreements.

   - Standards and Trade and Regulation: NIST provides a range of resources and activities to help users navigate the complex U.S. and international standards landscape. NIST coordinates with the World Trade Organization, Technical Barriers to Trade Related Inquiry Point and Notification Authority, and Standards Information Center -- providing unique standards, conformity assessment and technical regulations related information to NIST staff, U.S. government employees, U.S. exporters, and foreign trading partners.

   - Conformity Assessment and Laboratory Accreditation: Standards expedite trade across borders only when agreed-upon standards are followed consistently. NIST fosters compliance by evaluating conformity assessment accreditation bodies and ensuring adherence to standards specified in international agreements. NIST operates the National Voluntary Laboratory Accreditation Program (NVLAP) for the U.S. by providing accreditation to testing and calibration laboratories based on evaluation of their technical qualifications and competence to perform certain types of tests in specified fields using internationally accepted guides and standards. NIST also

designs and implements procedures for accrediting laboratories for their capability to provide calibrations traceable to national standards.

**Examples of Accomplishments**

Through its work in this activity and subactivity, NIST has delivered significant impact to stakeholders in the Federal Government and industry. Programs managed by the SPO, and SCO have yielded significant impacts.

- In May of 2022, researchers from NIST presented a solution to one remaining challenge that accuracy of optical outdoor measurements of greenhouse gasses. That challenge is the air mass over a path that may have pressure variations. To date, high precision optical measurements of greenhouse gases have relied on pressure measurements from a co-located pressure sensor for this critical input. However, researchers demonstrated that simultaneous measurements of different atmospheric gasses using the same optical sensor can be used instead.

- The NIST Forensic Science Research Program facilitated the development of a DNA Analysis Process Map and a Footwear and Tire Analysis Process Map through collaborations with OSAC's Human Forensic Biology Subcommittee and Footwear & Tire Subcommittee. The process mapping team worked together to capture and document the diverse practices of multiple laboratories. The maps, released in May and June 2022, benefit the forensic science community by providing a behind-the-scenes perspective into the various components and complexities involved in the examination process. These maps can also be used to identify best practices, reduce errors, assist in training new examiners, and highlight areas where further research or standardization would be beneficial to analyze forensic evidence.

- The NIST Forensic Science Research Program reviewed the scientific foundations of bitemark analysis, a forensic technique in which marks on the skin of a biting victim are compared with the teeth of a suspected biter, and published findings in a draft report, *Bitemark Analysis: A NIST Scientific Foundation Review*. The report fills a need identified in a landmark 2009 study by the National Academies of Sciences, Engineering, and Medicine, which called for research to address issues of accuracy, reliability and validity in many forensic science disciplines, including bitemark analysis.

- The NIST Open Data Program has made more than 12,000 GB of research data available to more than 11,000 unique visitors to the NIST Science Data Portal. In 2022, NIST Published 149 NIST datasets and software, and 29 terabytes of NIST data was downloaded from the NIST Data Portal at data.nist.gov. NIST, in coordination with other Commerce bureaus, is providing both mission-focused and administrative staff with data skills training commensurate with their needs, helping them draw meaningful information from data available to them.

- NIST through the SCO is coordinating with Federal partners on the U.S. Government's engagement in key standard development areas including critical and emerging technologies such as Artificial Intelligence, 5G and beyond, and quantum information science, space situational awareness, and biotechnology. As China's engagement in international standards grows, NIST has ramped up

coordination and increased its leadership in critical and emerging technology standards, including through the SCO-led Interagency Committee on Standards Policy and via bi- and multi-lateral engagements with partners and allies.

- Today, NIST directly supports standards development by the participation of nearly 570 NIST technical staff in over 300 standards organizations, on more than 3000 different standards activities, in support of domestic and international priorities. NIST, through the SCO, is also working closely with the National Security Council to develop a first of its kind national strategy for Critical and Emerging Technologies. The SCO continues to provide support to U.S. Trade Representatives with respect to the important role of documentary standards in trade and has raised the profile of standards as key to national and economic security among key offices in the Executive Office of the President.

- The SCO provides standards training across the government to improve participation in and use of standards. The SCO also launched the U.S. government-only publication *International Standards Alert* that provides information about important standards activity occurring in International Organization for Standardization (ISO), International Electrotechnical Commission, and International Telecommunication Union (ITU), to generate U.S. government participation and influence in key areas.

- The SCO is operationalizing the International Standards Alert, Strategic Standards Information (SSI) mechanism, and International Standards Cooperation Network (ISCN). These are three strategic efforts that connect standards information and awareness across U.S. government agencies and likeminded partners and allies. These mechanisms are a proactive approach by the U.S. government, to protect our collective interests and involvement in international standards development, with a particular focus on critical and emerging technologies.

- In February 2023, the SCO published a guide to United States Personal Protective Equipment (PPE) Compliance Requirements. This Guide addresses compliance requirements for PPE used in the workplace, except for PPE used in a nuclear or medical setting. Several U.S. federal agencies administer regulations associated with PPE.

- In 2022, the SCO made five awards totaling nearly $500,000 to support standards education in undergraduate and graduate curricula. The disciplines supported by this year's awards include infrastructure improvement and resilience, building information modeling, nanomaterials engineering, aerospace, robotics, and sustainability. The NIST Standards Services Curricula Development Cooperative Agreement (SSCD CAP) Program is designed to help integrate standards and standardization content into undergraduate and graduate programs at U.S. colleges and universities using sustainable approaches that can be replicated and/or built upon.

- The SCO, through laboratory accreditation and its role as the U.S. designating authority in international telecom equipment Mutual Recognition Agreements, has facilitated U.S. testing laboratories' capabilities in reducing market access burdens for U.S telecom equipment companies doing business globally.

Many more interesting accomplishments and industry impacts can be found at: https://www.nist.gov/standardsgov/what-we-do/standardization-coordination and at https://www.nist.gov/spo.

Statement of Operating Objectives

Special Programs Office - NIST's SPO plans and manages high-profile programs that span the mission and expertise of multiple NIST laboratories to address critical national needs. To meet these needs, SPO works with and forges partnerships among government, private industry, academia, and professional organizations to provide world-class leadership in advanced measurement science, science-based standards, and data-driven technology innovations. SPO actively fosters communication and collaboration between NIST and external stakeholder communities, as well as agile collaboration across organizational boundaries at NIST.

In Forensic Science, NIST is focused on:

- Advanced Forensic Science Research – NIST researchers work both on technologies for forensic analysis and the mathematical and statistical tools that help quantify confidence in the results of a forensics test. To disseminate this work into the forensic science community,
  NIST develops measurement protocols, calibration systems, Standard Reference Materials and Data, authoritative guidelines, and works with standards-developing organizations to formalize many of these as consensus standards.
- Science-based Standards Development – Since 2014, NIST has administered the Organization of Scientific Area Committees (OSAC) for Forensic Science Program which brings together over 500 members representing forensic science stakeholders from academia, Federal, state, and local government, and the private sector to facilitate the development of scientifically sound forensic science standards and encourage their adoption across the country. OSAC has over 90 standards listed on its OSAC Registry and has received declarations from over 80 forensic science service providers that have implemented standards listed on the OSAC Registry.
- Scientific Foundation Studies – NIST conducts in-depth reviews to identify priorities for future research, help laboratories identify appropriate limitations on the use of forensic methods, and suggest steps for moving the field forward. NIST recently published two of several scientific foundation reviews on DNA mixture interpretation.
- Operation of the NIST Center of Excellence in Forensics – CSAFE was established in 2015 and renewed in 2020 to help build a statistically sound and scientifically solid foundation for the analysis and interpretation of pattern impression and digital evidence. This multi-university *NIST Center of Excellence* is working to address the issues of accuracy, reliability, and validity of analyses in the examination of pattern and digital evidence.
- NIST plans to expand its Forensic Science Program in four major areas of computational forensic science, forensic science data, forensic science quality assurance, and forensic science education for the legal community.

In Greenhouse Gas Measurements, NIST is focused on:

- Developing and Providing an Innovative Measurement Framework – NIST has made significant progress toward the development of an innovative measurement framework to estimate urban GHG emissions with high accuracy to track progress (one to three percent per year) and at the space and time resolutions required to guide evidence-based decision-making for implementing climate actions. The framework combines two independent methods to measure and map urban greenhouse gas emissions and removals, using one method to calibrate the other.

  - The top-down or atmospheric method measures and maps urban GHG emissions by coupling high accuracy ground-based observing networks and airborne measurements of atmospheric GHG concentrations with numerical weather simulation and statistical optimization methods.
  - The bottom-up method uses advanced GHG accounting methods to provide fine-scale determination of urban greenhouse gas emissions locations. These maps account for fossil fuel emissions, biogenic sinks, and emissions associated with urban vegetation and agricultural and forested areas surrounding cities.

- Urban Dome Testbeds – NIST established its Urban GHG Measurements Testbed System to demonstrate the feasibility and validity of the new measurement framework. NIST operates testbeds in Indianapolis, the Los Angeles (LA) Air Basin, and the U.S. Northeast Corridor beginning in the Washington, DC/Baltimore regions (NEC/BW) and extending to Boston over time. These testbeds encompass a range of meteorological, climatic, and emissions profiles spanning U.S. urban topographic and meteorological conditions. Recent measurements in the Indianapolis testbed (1 km and hourly resolution) demonstrated a better than 10 percent consistency between the top-down and bottom-up methods. Recent results in the LA and NEC/BW testbeds, using similar methods, detected and accurately quantified GHG reductions before and during the early months of the 2020 pandemic in two significantly different urban typologies.
- U.S. GHG Information Center – NIST plans to establish the U.S. GHG Information Center (USGIC) in partnership with government stakeholders at all levels and with the business, academic, and non-governmental organizations. NIST will develop and provide mature, measurements-based scientific tools, methods, and data to estimate GHG emissions with high accuracy to track progress (one to three percent per year) and with the space and time resolutions required to guide evidence-based decision-making. The validated tools, methods, and data that are disseminated will enable the identification and pursuit of the most efficient and economically viable emission reduction opportunities in urban areas.
- NIST plans to expand its GHG Measurements Program in four major areas:
  - Linking Surface Emissions Measurements to Satellite Observations
  - Fossil Fuel and Biogenic Emissions/Uptake Modeling for Bottom-Up GHG Estimation;
  - Measurements and Models for Top-Down GHG Estimation; and
  - International Standards and Measurement Methods.

In Open Data, NIST is focused on:

- Providing public access to results of NIST-funded research (publications, data, code) and expanding system capabilities to enable collection of metadata for other mission-related, administrative, and operational data.
- Addressing other requirements of the Evidence Act, including assessment of staff data skills and the maturity of the data program as well as facilitating staff access to training in data literacy and in data skills appropriate for the roles they fill.
- Ensuring that information NIST releases is accessible both in terms of Section 508 compliance and the efforts to make information available to underserved communities.
- Planning to establish a new Gateway to Innovation that will allow stakeholders to easily locate NIST products and see the relationships among them. For example, if data is associated with a publication about characterization of a Standard Reference Material using equipment for which NIST has obtained a patent, all five items will be returned in a search. Currently, users must search five separate portals and are not informed about the other related resources available.

Standards Coordination Office - NIST's SCO plays a unique role in the Federal Government in coordinating Federal standards activities with those of the private sector and as a resource to Federal agencies and the private sector on the U.S. approach to standards and conformity. Thus, SCO is well-positioned to support the Administration priorities addressing trade, technology, innovation, and competitiveness. SCO will continue its effort to raise awareness and improve information sharing relating to emerging standards issues among Federal agencies. Such information sharing is a critical component of ensuring that agencies can understand and respond to developments in the U.S. and abroad that can impact U.S. competitiveness and innovation.

Examples of efforts include work currently underway in collaboration with NIST's Information Technology Laboratory: two labeling programs on cybersecurity capabilities of Internet-of-Things (IoT) consumer devices and software development practices. The SCO is also supporting several efforts targeting artificial intelligence, and space commerce-related standard's needs. These efforts also include a strong element of partnership with the U.S. private sector and particularly the U.S. standards system, coordinated by the American National Standards Institute (ANSI), which represents U.S. interests in standards developing bodies such as ISO and the International Electrotechnical Commission.

Baldrige Performance Excellence Program - Baldrige helps organizations address a dynamic environment, focus on strategy-driven performance, achieve customer and workforce engagement, and improve governance and ethics, societal responsibilities, competitiveness, and long-term organizational sustainability. It offers participants a comprehensive management approach that focuses on results in all areas, organizational and personal learning, and knowledge sharing.

## Explanation and Justification

| Line Item | | 2022 Actual | | 2023 Enacted | | 2024 Base | |
|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Standards Coordination and Special Programs | Pos./BA | 217 | $126,773 | 244 | $172,207 | 244 | $175,215 |
| | FTE/Obl | 193 | 120,477 | 228 | 189,837 | 234 | 175,215 |

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Standards Coordination and Special Programs (Total Funding: $175.2 million and 244 Positions)

The FY 2024 base budget request is at the same programmatic level as the FY 2023 request level, adjusted for inflation. The Nation's founders knew the importance of weights and measures – that it is critical to commerce and trade and a critical role of the Federal Government. Section 8 of the Constitution gives the government the power to "fix the Standard of Weight and Measures" and Congress established the National Bureau of Standards (renamed NIST in 1988) in 1901 for that purpose. This role makes NIST a National Metrology Institute responsible for the dissemination of the fundamental units of measurement – the basis of international trade and commerce, and scientific progress. NIST is commonly recognized as the best in the world at what it does as a National Metrology Institute. The research managed by the SPO depends upon the one-of-a-kind measurement expertise provided by the NIST laboratories to solve problems of national significance.

In the areas of documentary standards which is the purview of the SCO, NIST also has a unique role. The National Technology Transfer Advancement Act of 1995 (P.L. 104-113) and OMB Circular A-119 assign NIST the responsibility of coordinating Federal Government activities in the documentary standards development and conformity assessment procedures. NIST provides a forum for Federal agency representatives to learn about standards and conformity assessment developments in the U.S. and abroad, share perspectives that can inform agency or USG positions on standards, and exchange current practices. By leading this Committee, NIST complements the coordination role provided by ANSI for the private sector.

In addition, approximately 570 NIST technical staff from five of NIST's laboratories (excluding user facilities) play a significant role in documentary standards development process by participating in almost 300 unique standards development organizations and contributing their technical skills and expertise in over 3,000 standards activities, including 100 standards-related leadership roles. Documentary standards development activities are effective means for disseminating NIST-developed technologies and measurement protocols since industry actively participates and rapidly adopts these standards.

The work supported by the Standards Coordination and Special Programs line item is primarily aligned with the NIST Laboratory work described in the Fundamental Measurement, Quantum Science, and Measurement Dissemination portfolio with an emphasis on measurement dissemination related activities.

The base funding request for NIST's Standards Coordination and Special Programs supports the following ongoing mission functions and programmatic areas, which are also described in more detail in the Laboratory Programs section of this budget request:

- Exploratory Measurement Science ($2.0 million)
- Advanced Manufacturing and Material Measurements ($13.0 million)
- Fundamental Measurement, Quantum Science, and Measurement Dissemination ($78.9 million)
- Advanced Communications, Networks, and Scientific Data Systems ($4.4 million)
- Health and biological systems measurements ($2.0 million)
- Physical Infrastructure and Resilience ($5.4 million)
- User Facilities ($4.1 million)

Additionally, this Activity/Subactivity funds the Baldrige Performance Excellence Program at $2.9 million and External Community Projects at $62.532 million.

**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**PROGRAM CHANGES FOR 2024**
(Dollar amounts in thousands)

| | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Climate Change and Environmental Sustainability | Pos/BA | 184 | $92,128 | 189 | $95,617 | 5 | $3,489 |
| | FTE/Obl. | 184 | 92,128 | 188 | 95,617 | 4 | 3,489 |

**Climate Change and Environmental Sustainability (+$3,489, 4 FTE/5 Positions)** - NIST requests an increase of $3.489 million to expand its efforts in greenhouse gas (GHG) measurement and monitoring, working in coordination with other federal agencies including NOAA, NASA, and EPA, consistent with actions developed through the Greenhouse Gas Monitoring and Measurement Interagency Working Group (GHG IWG). This request increases funds for the Standards Coordination and Special Programs (SCO-SPO) portion of the same initiative under Laboratory Programs. The U.S. needs comprehensive and advanced capabilities to measure, monitor, report, and verify emissions and removals of greenhouse gases from the atmosphere nationally, globally, across all regions and sectors. To achieve this goal, NIST will allocate $3.489 million towards a comprehensive, nation-wide measurement, monitoring, reporting, and verification system (MMRV System) that combines U.S. capabilities in greenhouse gas emissions, removals, and modeling across U.S. Agencies, private sector, and academia. The MMRV System concept will rely on two primary emission and removal components – atmospheric observations and facility-scale measurements. The MMRV System will provide full landmass emission coverage, allowing decisionmakers to assess the effectiveness of GHG reduction policies at national and subnational levels, track progress in meeting GHG reduction goals, inform GHG emission mitigation efforts, and better understand differences in national emissions estimates from different data sources.

The request increases NIST's investment in its Fundamental Measurement, Quantum Science, and Measurement Dissemination portfolio by $3.5 million.

Performance Measure:

| Performance Measures | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|
| Number of new reports and innovative methods that measure, monitor, report, and verify GHG emissions. | | | | | |
| With increase | 2 | 6 | 8 | 12 | 16 |
| Without increase | 1 | 2 | 3 | 3 | 4 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Measurement Science, Services, and Programs
Subactivity: Standards Coordination and Special Programs
Program Change: Climate Change and Environmental Sustainability

| Full-time permanent | | | | | |
|---|---|---|---|---|---|
| Title | | Grade | Number | Annual Salary | Total Salaries |
| Physical Scientist | | ZP IV | 5 | 132,368 | 661,840 |
| Total | | | 5 | | 661,840 |
| Less lapse | 25.00% | | (1) | | (165,460) |
| Total full-time permanent (FTE) | | | 4 | | 496,380 |
| 2024 pay Adjustment (5.2%) | | | | | 25,812 |
| | | | | | 522,192 |
| | | | | | |
| **Personnel Data Summary** | | | | | |
| Full-time Equivalent Employment (FTE) | | | | | |
| Full-time permanent | | | 4 | | |
| Part-time permanent | | | 0 | | |
| Full-time temporary | | | 0 | | |
| Part-time temporary | | | 0 | | |
| Total FTE | | | 4 | | |
| | | | | | |
| Authorized Positions | | | | | |
| Full-time permanent | | | 5 | | |
| Part-time permanent | | | 0 | | |
| Full-time temporary | | | 0 | | |
| Part-time temporary | | | 0 | | |
| Total Positions | | | 5 | | |
| | | | | | |

# Department of Commerce
# National Institute of Standards and Technology
# Scientific and Technical Research and Services
# PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Direct Obligations amounts in thousands)

Activity: Measurement Science, Services, and Programs
Subactivity: Standards Coordination and Special Programs

| | Object Class | 2022 Actuals | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 11.1 | Full-time permanent compensation | 22,950 | 28,259 | 30,233 | 30,755 | 522 |
| 11.3 | Other than full-time permanent | 1,801 | 1,877 | 2,008 | 2,008 | 0 |
| 11.5 | Other personnel compensation | 606 | 631 | 675 | 675 | 0 |
| 11.8 | Special personnel services payments | 0 | 0 | 0 | 0 | 0 |
| 11.9 | Total personnel compensation | 25,357 | 30,767 | 32,916 | 33,438 | 522 |
| 12.1 | Civilian personnel benefits | 8,998 | 10,691 | 10,725 | 10,897 | 172 |
| 13 | Benefits for former personnel | 0 | 0 | 0 | 0 | 0 |
| 21 | Travel and transportation of persons | 716 | 834 | 842 | 863 | 21 |
| 22 | Transportation of things | 42 | 127 | 127 | 128 | 1 |
| 23 | Rent, communications, and utilities | 0 | 0 | 0 | 0 | 0 |
| 23.1 | Rental payments to GSA | 0 | 0 | 31 | 31 | 0 |
| 23.2 | Rental payments to others | 0 | 0 | 0 | 0 | 0 |
| 23.3 | Communications, utilities, and misc. charges | 2,664 | 4,774 | 4,949 | 5,337 | 388 |
| 24 | Printing and reproduction | 30 | 100 | 100 | 107 | 7 |
| 25 | Other contractual services | 0 | 0 | 0 | 0 | 0 |
| 25.1 | Advisory and assistance services | 0 | 0 | 0 | 0 | 0 |
| 25.2 | Other services from non-Federal sources | 6,229 | 29,805 | 12,591 | 12,861 | 270 |
| 25.3 | Other goods and services from Federal sources | 3,937 | 6,148 | 6,343 | 6,461 | 118 |
| 25.4 | Operation and maintenance of facilities | 0 | 0 | 0 | 0 | 0 |
| 25.5 | Research and development contracts | 2,617 | 3,067 | 3,067 | 3,817 | 750 |
| 25.6 | Medical care | 0 | 0 | 0 | 0 | 0 |
| 25.7 | Operation and maintenance of equipment | 1,490 | 1,967 | 1,967 | 2,013 | 46 |
| 25.8 | Subsistence and support of persons | 0 | 0 | 0 | 0 | 0 |
| 26 | Supplies and materials | 1,850 | 2,301 | 2,301 | 2,374 | 73 |
| 31 | Equipment | 5,446 | 5,956 | 5,956 | 6,277 | 321 |
| 32 | Lands and structures | 0 | 0 | 0 | 0 | 0 |
| 33 | Investments and loans | 0 | 0 | 0 | 0 | 0 |
| 41 | Grants, subsidies and contributions | 61,101 | 93,300 | 93,300 | 94,100 | 800 |
| 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 |
| 99.9 | Total obligations | 120,477 | 189,837 | 175,215 | 178,704 | 3,489 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**PROGRAM CHANGES FOR 2024**
(Dollar amounts in thousands)

| | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Removal of One-time | Pos/BA | 0 | $62,532 | 0 | 0 | 0 | ($62,532) |
| Congressional External Community Projects | FTE/Obl. | 0 | $62,532 | 0 | 0 | 0 | ($62,532) |

**Removal of One-time Congressional External Community Projects (-$62,532, +0 FTE/+0 Position) -** This program change removes funding for one-time congressionally directed external community projects provided in the FY 2023 enacted bill.

# Department of Commerce
# National Institute of Standards and Technology
# Scientific and Technical Research and Services
# PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Direct Obligations amounts in thousands)

Activity: Measurement Science, Services, and Programs
Subactivity: Standards Coordination and Special Programs

| | Object Class | 2022 Actuals | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 11.1 | Full-time permanent compensation | 22,950 | 28,259 | 30,233 | 30,755 | 0 |
| 11.3 | Other than full-time permanent | 1,801 | 1,877 | 2,008 | 2,008 | 0 |
| 11.5 | Other personnel compensation | 606 | 631 | 675 | 675 | 0 |
| 11.8 | Special personnel services payments | 0 | 0 | 0 | 0 | 0 |
| 11.9 | Total personnel compensation | 25,357 | 30,767 | 32,916 | 33,438 | 0 |
| 12.1 | Civilian personnel benefits | 8,998 | 10,691 | 10,725 | 10,897 | 0 |
| 13 | Benefits for former personnel | 0 | 0 | 0 | 0 | 0 |
| 21 | Travel and transportation of persons | 716 | 834 | 842 | 863 | 0 |
| 22 | Transportation of things | 42 | 127 | 127 | 128 | 1 |
| 23 | Rent, communications, and utilities | 0 | 0 | 0 | 0 | 0 |
| 23.1 | Rental payments to GSA | 0 | 0 | 31 | 31 | 0 |
| 23.2 | Rental payments to others | 0 | 0 | 0 | 0 | 0 |
| 23.3 | Communications, utilities, and misc. charges | 2,664 | 4,774 | 4,949 | 5,337 | 0 |
| 24 | Printing and reproduction | 30 | 100 | 100 | 107 | 0 |
| 25 | Other contractual services | 0 | 0 | 0 | 0 | 0 |
| 25.1 | Advisory and assistance services | 0 | 0 | 0 | 0 | 0 |
| 25.2 | Other services from non-Federal sources | 6,229 | 29,805 | 12,591 | 12,861 | 0 |
| 25.3 | Other goods and services from Federal sources | 3,937 | 6,148 | 6,343 | 6,461 | 0 |
| 25.4 | Operation and maintenance of facilities | 0 | 0 | 0 | 0 | 0 |
| 25.5 | Research and development contracts | 2,617 | 3,067 | 3,067 | 3,817 | 0 |
| 25.6 | Medical care | 0 | 0 | 0 | 0 | 0 |
| 25.7 | Operation and maintenance of equipment | 1,490 | 1,967 | 1,967 | 2,013 | 0 |
| 25.8 | Subsistence and support of persons | 0 | 0 | 0 | 0 | 0 |
| 26 | Supplies and materials | 1,850 | 2,301 | 2,301 | 2,374 | 0 |
| 31 | Equipment | 5,446 | 5,956 | 5,956 | 6,277 | 0 |
| 32 | Lands and structures | 0 | 0 | 0 | 0 | 0 |
| 33 | Investments and loans | 0 | 0 | 0 | 0 | 0 |
| 41 | Grants, subsidies and contributions | 61,101 | 93,300 | 93,300 | 30,768 | -62,532 |
| 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 |
| 99.9 | Total obligations | 120,477 | 189,837 | 175,215 | 112,683 | -62,532 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**SUMMARY OF REQUIREMENTS BY OBJECT CLASS**
(Dollar amounts in thousands)

| | Object Class | 2022 Actual | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 11 | Personnel compensation | | | | | |
| 11.1 | Full-time permanent | $283,437 | $318,112 | $332,874 | $344,353 | $11,479 |
| 11.3 | Other than full-time permanent | 22,240 | 23,086 | 24,298 | 24,298 | 0 |
| 11.5 | Other personnel compensation | 7,486 | 10,711 | 11,714 | 11,714 | 0 |
| 11.9 | **Total personnel compensation** | 313,163 | 351,909 | 368,886 | 380,365 | 11,479 |
| 12.1 | Civilian personnel benefits | 115,261 | 127,178 | 133,075 | 136,853 | 3,778 |
| 13 | Benefits for former personnel | 15 | 15 | 15 | 15 | 0 |
| 21 | Travel and transportation of persons | 6,492 | 10,167 | 10,151 | 10,477 | 326 |
| 22 | Transportation of things | 925 | 1,014 | 991 | 1,059 | 68 |
| 23.1 | Rental payments to GSA | 141 | 144 | 503 | 503 | 0 |
| 23.2 | Rental payments to others | 1,939 | 1,939 | 1,978 | 1,978 | 0 |
| 23.3 | Communications, utilities, and miscellaneous charges | 16,532 | 26,127 | 24,228 | 31,548 | 7,320 |
| 24 | Printing and reproduction | 426 | 539 | 496 | 615 | 119 |
| 25.1 | Advisory and assistance services | 3,026 | 2,587 | 2,478 | 2,478 | 0 |
| 25.2 | Other services from non-Federal sources | 65,785 | 166,716 | 73,678 | 90,995 | 17,317 |
| 25.3 | Other goods and services from Federal sources | 48,589 | 54,747 | 52,076 | 53,709 | 1,633 |
| 25.5 | Research and development contracts | 32,296 | 35,748 | 33,403 | 35,904 | 2,501 |
| 25.7 | Operation and maintenance of equipment | 18,393 | 20,997 | 20,506 | 21,531 | 1,025 |
| 26 | Supplies and materials | 30,687 | 32,466 | 32,757 | 34,007 | 1,250 |
| 31 | Equipment | 43,868 | 49,901 | 50,622 | 57,627 | 7,005 |
| 32 | Land and structures | 0 | 0 | 0 | 0 | 0 |
| 41 | Grants, subsidies, and contributions | 135,561 | 186,108 | 182,908 | 136,781 | (46,127) |
| 42 | Insurance claims and indemnities | 0 | 0 | 0 | 0 | 0 |
| 43 | Interest and dividends | 3 | 3 | 3 | 3 | 0 |
| 99 | Total Obligations | 833,102 | 1,068,305 | 988,754 | 996,448 | 7,694 |

| | Object Class | 2022 Actual | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 99 | Total Obligations | $833,102 | $1,068,305 | $988,754 | $996,448 | $7,694 |
| | Less Prior Year Recoveries | (6,974) | 0 | 0 | 0 | 0 |
| | Less Prior Year Refunds | (219) | 0 | 0 | 0 | 0 |
| | Less prior year unobligated balance | (26,214) | (73,805) | 0 | 0 | 0 |
| | Plus Unobligated Balance, End of Year | 73,805 | 0 | 0 | 0 | 0 |
| | Plus Unobligated Balance, Expired | 0 | 0 | 0 | 0 | 0 |
| | Total Budget Authority | 873,500 | 994,500 | 988,754 | 996,448 | 7,694 |
| | Transfers from DoJ for Office of Law Enforcement Standards | (1,500) | (1,500) | 0 | (1,500) | (1,500) |
| | Appropriation | 872,000 | 993,000 | 988,754 | 994,948 | 6,194 |
| | Personnel Data | | | | | |
| | Full-time Equivalent Employment: | | | | | |
| | Full-time permanent | 2,138 | 2,415 | 2,440 | 2,531 | 91 |
| | Other than full-time permanent | 246 | 246 | 246 | 246 | 0 |
| | Total | 2,384 | 2,661 | 2,686 | 2,777 | 91 |
| | Authorized Positions: | | | | | |
| | Full-time permanent | 2,597 | 2,736 | 2,736 | 2,859 | 123 |
| | Other than full-time permanent | 72 | 72 | 72 | 72 | 0 |
| | Total | 2,669 | 2,808 | 2,808 | 2,931 | 123 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**Activity/Subactivity: Laboratory Programs**
(Dollar amounts in thousands)

| | Object Class | 2022 Actual | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 11 | Personnel compensation | | | | | |
| 11.1 | Full-time permanent | $257,229 | $286,187 | $298,733 | $309,690 | $10,957 |
| 11.3 | Other than full-time permanent | 20,183 | 20,942 | 22,005 | 22,005 | 0 |
| 11.5 | Other personnel compensation | 6,794 | 9,990 | 10,943 | 10,943 | 0 |
| 11.9 | **Total personnel compensation** | 284,206 | 317,119 | 331,681 | 342,638 | 10,957 |
| 12.1 | Civilian personnel benefits | 105,015 | 115,112 | 120,971 | 124,577 | 3,606 |
| 13 | Benefits for former personnel | 15 | 15 | 15 | 15 | 0 |
| 21 | Travel and transportation of persons | 5,738 | 9,295 | 9,270 | 9,575 | 305 |
| 22 | Transportation of things | 855 | 859 | 836 | 903 | 67 |
| 23.1 | Rental payments to GSA | 141 | 144 | 468 | 468 | 0 |
| 23.2 | Rental payments to others | 1,939 | 1,939 | 1,978 | 1,978 | 0 |
| 23.3 | Communications, utilities, and miscellaneous charges | 13,253 | 20,738 | 18,643 | 25,576 | 6,933 |
| 24 | Printing and reproduction | 368 | 411 | 368 | 480 | 112 |
| 25.1 | Advisory and assistance services | 3,026 | 2,587 | 2,478 | 2,478 | 0 |
| 25.2 | Other services from non-Federal sources | 56,756 | 134,621 | 58,782 | 74,328 | 15,546 |
| 25.3 | Other goods and services from Federal sources | 41,640 | 45,587 | 41,476 | 42,991 | 1,515 |
| 25.5 | Research and development contracts | 27,677 | 30,679 | 28,334 | 30,085 | 1,751 |
| 25.7 | Operation and maintenance of equipment | 15,763 | 17,890 | 17,399 | 18,378 | 979 |
| 26 | Supplies and materials | 27,984 | 29,312 | 29,603 | 30,780 | 1,177 |
| 31 | Equipment | 36,329 | 41,852 | 42,573 | 49,257 | 6,684 |
| 32 | Land and structures | 0 | 0 | 0 | 0 | 0 |
| 41 | Grants, subsidies, and contributions | 74,460 | 92,808 | 89,608 | 105,213 | 15,605 |
| 42 | Insurance claims and indemnities | 0 | 0 | 0 | 0 | 0 |
| 43 | Interest and dividends | 3 | 3 | 3 | 3 | 0 |
| 99 | Total Obligations | 695,168 | 860,971 | 794,486 | 859,723 | 65,237 |

| | Object Class | 2022 Actual | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 99 | Total Obligations | $695,168 | $860,971 | $794,486 | $859,723 | $65,237 |
| | Less Prior Year Recoveries | (6,735) | 0 | 0 | 0 | 0 |
| | Less Prior Year Refunds | (219) | 0 | 0 | 0 | 0 |
| | Less prior year unobligated balance | (18,085) | (57,638) | 0 | 0 | 0 |
| | Plus Unobligated Balance, End of Year | 57,638 | 0 | 0 | 0 | 0 |
| | Plus Unobligated Balance, Expired | 0 | 0 | 0 | 0 | 0 |
| | Total Budget Authority | 727,767 | 803,333 | 794,486 | 859,723 | 65,237 |
| | Transfer to DoC Working Capital for HCHB renovation. | | | | | |
| | Transfer from Election Assistance Commission | 0 | 0 | 0 | 0 | 0 |
| | Transfers from DoJ for Office of Law Enforcement Standards | 0 | 0 | 0 | 0 | 0 |
| | Appropriation | 727,767 | 803,333 | 794,486 | 859,723 | 65,237 |
| | Personnel Data | | | | | |
| | Full-time Equivalent Employment: | | | | | |
| | Full-time permanent | 1,941 | 2,181 | 2,200 | 2,287 | 87 |
| | Other than full-time permanent | 223 | 223 | 223 | 223 | 0 |
| | Total | 2,164 | 2,404 | 2,423 | 2,510 | 87 |
| | Authorized Positions: | | | | | |
| | Full-time permanent | 2,357 | 2,469 | 2,469 | 2,587 | 118 |
| | Other than full-time permanent | 65 | 65 | 65 | 65 | 0 |
| | Total | 2,422 | 2,534 | 2,534 | 2,652 | 118 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**Activity/Subactivity: Corporate Services**
(Dollar amounts in thousands)

| | Object Class | 2022 Actual | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 11 | Personnel compensation | | | | | |
| 11.1 | Full-time permanent | $3,258 | $3,666 | $3,908 | $3,908 | 0 |
| 11.3 | Other than full-time permanent | 256 | 267 | 285 | 285 | 0 |
| 11.5 | Other personnel compensation | 86 | 90 | 96 | 96 | 0 |
| 11.9 | **Total personnel compensation** | 3,600 | 4,023 | 4,289 | 4,289 | 0 |
| 12.1 | Civilian personnel benefits | 1,248 | 1,375 | 1,379 | 1,379 | 0 |
| 13 | Benefits for former personnel | 0 | 0 | 0 | 0 | 0 |
| 21 | Travel and transportation of persons | 38 | 38 | 39 | 39 | 0 |
| 22 | Transportation of things | 28 | 28 | 28 | 28 | 0 |
| 23.1 | Rental payments to GSA | 0 | 0 | 4 | 4 | 0 |
| 23.2 | Rental payments to others | 0 | 0 | 0 | 0 | 0 |
| 23.3 | Communications, utilities, and miscellaneous charges | 615 | 615 | 636 | 636 | 0 |
| 24 | Printing and reproduction | 28 | 28 | 28 | 28 | 0 |
| 25.1 | Advisory and assistance services | 0 | 0 | 0 | 0 | 0 |
| 25.2 | Other services from non-Federal sources | 2,800 | 2,290 | 2,305 | 2,305 | 0 |
| 25.3 | Other goods and services from Federal sources | 3,012 | 3,012 | 4,257 | 4,257 | 0 |
| 25.5 | Research and development contracts | 2,002 | 2,002 | 2,002 | 2,002 | 0 |
| 25.7 | Operation and maintenance of equipment | 1,140 | 1,140 | 1,140 | 1,140 | 0 |
| 26 | Supplies and materials | 853 | 853 | 853 | 853 | 0 |
| 31 | Equipment | 2,093 | 2,093 | 2,093 | 2,093 | 0 |
| 32 | Land and structures | 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 | 17,457 | 17,497 | 19,053 | 19,053 | 0 |

| | Object Class | 2022 Actual | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 99 | Total Obligations | $17,457 | $17,497 | $19,053 | $19,053 | 0 |
| | Less Prior Year Recoveries | (34) | 0 | 0 | 0 | 0 |
| | Less Prior Year Refunds | 0 | 0 | 0 | 0 | 0 |
| | Less prior year unobligated balance | 0 | (37) | 0 | 0 | 0 |
| | Plus Unobligated Balance, End of Year | 37 | 0 | 0 | 0 | 0 |
| | Total Budget Authority | 17,460 | 17,460 | 19,053 | 19,053 | 0 |
| | Transfer from Election Assistance Commission | 0 | 0 | 0 | 0 | 0 |
| | Transfers from DoJ for Office of Law Enforcement Standards | 0 | 0 | 0 | 0 | 0 |
| | Appropriation | 17,460 | 17,460 | 19,053 | 19,053 | 0 |
| | Personnel Data | | | | | |
| | Full-time Equivalent Employment: | | | | | |
| | Full-time permanent | 24 | 26 | 26 | 26 | 0 |
| | Other than full-time permanent | 3 | 3 | 3 | 3 | 0 |
| | Total | 27 | 29 | 29 | 29 | 0 |
| | Authorized Positions: | | | | | |
| | Full-time permanent | 29 | 29 | 29 | 29 | 0 |
| | Other than full-time permanent | 1 | 1 | 1 | 1 | 0 |
| | Total | 30 | 30 | 30 | 30 | 0 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**Activity/Subactivity: Standards Coordination and Special Programs**
(Dollar amounts in thousands)

| | Object Class | 2022 Actual | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 11 | Personnel compensation | | | | | |
| 11.1 | Full-time permanent | $22,950 | $28,259 | $30,233 | $30,755 | $522 |
| 11.3 | Other than full-time permanent | 1,801 | 1,877 | 2,008 | 2,008 | 0 |
| 11.5 | Other personnel compensation | 606 | 631 | 675 | 675 | 0 |
| 11.9 | **Total personnel compensation** | 25,357 | 30,767 | 32,916 | 33,438 | 522 |
| 12.1 | Civilian personnel benefits | 8,998 | 10,691 | 10,725 | 10,897 | 172 |
| 13 | Benefits for former personnel | 0 | 0 | 0 | 0 | 0 |
| 21 | Travel and transportation of persons | 716 | 834 | 842 | 863 | 21 |
| 22 | Transportation of things | 42 | 127 | 127 | 128 | 1 |
| 23.1 | Rental payments to GSA | 0 | 0 | 31 | 31 | 0 |
| 23.2 | Rental payments to others | 0 | 0 | 0 | 0 | 0 |
| 23.3 | Communications, utilities, and miscellaneous charges | 2,664 | 4,774 | 4,949 | 5,336 | 387 |
| 24 | Printing and reproduction | 30 | 100 | 100 | 107 | 7 |
| 25.1 | Advisory and assistance services | 0 | 0 | 0 | 0 | 0 |
| 25.2 | Other services from non-Federal sources | 6,229 | 29,805 | 12,591 | 14,362 | 1,771 |
| 25.3 | Other goods and services from Federal sources | 3,937 | 6,148 | 6,343 | 6,461 | 118 |
| 25.5 | Research and development contracts | 2,617 | 3,067 | 3,067 | 3,817 | 750 |
| 25.7 | Operation and maintenance of equipment | 1,490 | 1,967 | 1,967 | 2,013 | 46 |
| 26 | Supplies and materials | 1,850 | 2,301 | 2,301 | 2,374 | 73 |
| 31 | Equipment | 5,446 | 5,956 | 5,956 | 6,277 | 321 |
| 32 | Land and structures | 0 | 0 | 0 | 0 | 0 |
| 41 | Grants, subsidies, and contributions | 61,101 | 93,300 | 93,300 | 31,568 | (61,732) |
| 42 | Insurance claims and indemnities | 0 | 0 | 0 | 0 | 0 |
| 43 | Interest and dividends | 0 | 0 | 0 | 0 | 0 |
| 99 | Total Obligations | 120,477 | 189,837 | 175,215 | 117,672 | (57,543) |

| | Object Class | 2022 Actual | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 99 | Total Obligations | $120,477 | $189,837 | $175,215 | $117,672 | ($57,543) |
| | Less Prior Year Recoveries | (205) | 0 | 0 | 0 | 0 |
| | Less Prior Year Refunds | 0 | 0 | 0 | 0 | 0 |
| | Less prior year unobligated balance | (8,129) | (16,130) | 0 | 0 | 0 |
| | Plus Unobligated Balance, End of Year | 16,130 | 0 | 0 | 0 | 0 |
| | Total Budget Authority | 128,273 | 173,707 | 175,215 | 117,672 | (57,543) |
| | Transfer from Election Assistance Commission | 0 | 0 | 0 | 0 | 0 |
| | Transfers from DoJ for Office of Law Enforcement Standards | (1,500) | (1,500) | 0 | (1,500) | (1,500) |
| | Appropriation | 126,773 | 172,207 | 175,215 | 116,172 | (59,043) |
| | Personnel Data | | | | | |
| | Full-time Equivalent Employment: | | | | | |
| | Full-time permanent | 173 | 208 | 214 | 218 | 4 |
| | Other than full-time permanent | 20 | 20 | 20 | 20 | 0 |
| | Total | 193 | 228 | 234 | 238 | 4 |
| | Authorized Positions: | | | | | |
| | Full-time permanent | 211 | 238 | 238 | 243 | 5 |
| | Other than full-time permanent | 6 | 6 | 6 | 6 | 0 |
| | Total | 217 | 244 | 244 | 249 | 5 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**APPROPRIATION LANGUAGE AND CODE CITATIONS**

1. For necessary expenses of the National Institute of Standards and Technology,

15 U.S.C. 272; 273; 278b-j; p
15 U.S.C. 290b-f
15 U.S.C. 1151-52
15 U.S.C. 1454(d-e)
15 U.S.C. 1511, 1512
15 U.S.C. 3710a-d
15 U.S.C. 3711a
15 U.S.C. 7301-7313
15 U.S.C. 7406
15 U.S.C. 7506(a)

15 U.S.C. 272; 273; 278b-j; provides basic authority for the performance of the functions and activities of the National Institute of Standards and Technology, authorizes appropriations for these purposes to be provided to the general public and specific institutions, governments, firms, and individuals, and requires the notification of Congress of a reprogramming of funds that exceeds a limit specified in public law.

15 U.S.C. 290b-f directs the Secretary of Commerce to provide for the collection, compilation, critical evaluation, publication, and dissemination of standard reference data and the authority to establish a non-agricultural technology office.

15 U.S.C. 1151-1152 establishes within the Department of Commerce, a central clearinghouse for technical information useful to American business and industry and provides for the dissemination of this technical, scientific information via the National Technical Information Service.

15 U.S.C. 1454(d-e) provides NIST with the authority to request that manufacturers and distributors of a commodity participate involuntary product standards when there is undue proliferation of weights, measures, and quantities. Reports and recommendations to Congress are to be made upon industry failure to adopt these standards.

15 U.S.C. 1511, 1512 specifies that all bureaus of the Department of Commerce come under the authority of the Secretary of Commerce and that such bureaus including NIST shall be subject to the authority of the Secretary of Commerce.

15 U.S.C. 3710a-d provides the authority to enter into CRADAs, to make cash awards to scientific personnel for inventions, to retain royalties and to distribute royalties for inventions, and to communicate and coordinate for the Offices of Research and Technology Applications in Federal laboratories.

15 U.S.C. 3711a provides the authority for the Baldrige National Quality Award.

15 U.S.C. 7301-7313 establishes National Construction Safety Teams within NIST to respond to building and structural emergencies.

15 U.S.C. 7406 provides authority for NIST to conduct Cyber Security Research and Development to minimize security risks associated with computer systems used by the Federal government.

15 U.S.C. 7506(a) provides for the establishment of a nanotechnology research and development program within NIST.

P.L. 110-143 121 STAT 1809 provides NIST to assist in developing a research program to establish guidelines for the remediation of former methamphetamine laboratories in the United States as well as developing new detection technologies and appropriate Standard Reference Materials for methamphetamine detection testing.

2. $994,948,000 to remain available until expended,
3. of which not to exceed $9,000,000 may be transferred to the "Working Capital Fund." 15 U.S.C. 278b 15 U.S.C. 278b provides in part: "The National Institute of Standards and Technology is authorized to utilize in the performance of its functions the Working Capital Fund".

4. Public Law 110-69, America Competes Act, 121 Stat 572, passed August 9, 2007, reauthorizes the Scientific and Technical Research and Services appropriation through 2010. Public Law 111-358, America Competes Reauthorization Act, 2010, 124 Stat 3982, passed January 4, 2011, reauthorized the Scientific and Technical Research and Standards appropriation through 2013. In addition, an Emergency Communication and Tracking Technologies Research initiative and a Green Manufacturing and Construction initiative were authorized to develop advanced technologies in these areas.

5. Public Law 111-5, American Recovery and Reinvestment Act of 2009 made available funding to include $20,000,000 via transfer from the Department of Health and Human Services for continued work on advancing health care information enterprise integration.

6. Public Law 113-274 Cybersecurity Enhancement Act of 2014 amended Section 2c of the National Institute of Standards and Technology Act (15 U.S.C. 272(c) and established a Public-Private collaboration on Cybersecurity by designating the Director of the Institute activities that facilitate and support on an ongoing basis the development of a voluntary, consensus-based, industry-led set of standards, guidelines, best practices, methodologies, procedures, and processes to cost-effectively reduce cyber risks to the critical infrastructure of the United States.

7. Public Law 116-136, The Coronavirus Aid, Relief, and Economic Security Act, (CARES Act), as enacted March 27, 2020, made available funding, $6,000,000 for Scientific and Technical Research and Services “to remain available until September 30, 2021, to prevent, prepare for, and respond to coronavirus, domestically or internationally, by supporting continuity of operations, including measurement science to support viral testing and bio-manufacturing.”

8. Public Law 117-43, Extending Government Funding and Delivering Emergency Assistance Act made available funding to include $22,000,000 to remain available until September 30, 2023, and specific to carrying out investigations of building failures pursuant to the National Construction Safety Team Act of 2002.

9. Public Law 117-238, Consolidated Appropriations Act, 2023 made available funding to include $40,000,000 to remain available until expended, and specific to investigate the impacts of hurricanes, typhoons, and wildfires in calendar year 2022 to support the development of resilience standards with regard to weather and climate disasters, in addition to the underlying research to support those standards, and for necessary expenses to carry out investigations of building failures pursuant to the National Construction Safety Team Act of 2002.

**Department of Commerce**
**National Institute of Standards and Technology**
**Scientific and Technical Research and Services**
**ADVISORY AND ASSISTANCE SERVICES**
(Obligations in thousands of dollars)

| | FY 2022 Actual | FY 2023 Enacted | FY 2024 Estimate |
|---|---|---|---|
| Consulting Services | | | |
| Management and professional support services | $2,192 | $1,491 | $1,606 |
| Studies, analyses, and evaluations | 624 | 896 | 668 |
| Engineering and technical services | 210 | 200 | 204 |
| Total | 3,026 | 2,587 | 2,478 |

Significant Activities

Advisory and assistance services funded by the STRS appropriation include the review and evaluation of the technical functions and operations of NIST by the Board on Assessment of the National Academy of Sciences. The evaluation panels consider the importance and relative priority of projects, quality of staff, equipment needs, and finances, and the relation of the programs to the mission of NIST.

Need for Advisory and Assistance Services

The need for advisory and assistance services stems from the NIST role in dealing with the private sector, professional organizations, and the public sector. Inputs must be obtained from consultants who can bring their individual expertise to bear and help NIST in assessing its program plans to meet the needs of its customers. The alternative to utilizing these services is to make no attempt to have expertise from sources outside NIST and risk degradation of the working and professional relationship with those in the business of using the products and services offered by NIST.

**Department of Commerce**
**National Institute of Standards and Technology**
**Industrial Technology Services**
**SUMMARY OF RESOURCE REQUIREMENTS**
(Dollar amounts in thousands)

| | Positions | FTE | Budget Authority | Direct Obligations | Appro-priation |
|---|---|---|---|---|---|
| Enacted, 2023 | 131 | 123 | $239,000 | $245,996 | $239,000 |
| 2024 Adjustments to Base | | | | | |
| Other Changes: | | | | | |
| Annualization of positions financed in FY 2023 | 0 | 0 | 0 | 0 | 0 |
| Less: Disaster Relief Supplemental | (11) | (8) | (27,000) | (27,000) | (27,000) |
| Plus: Inflationary Adjustments to Base | 0 | 2 | 1,698 | 1,698 | 1,698 |
| 2024 Base | 120 | 117 | 213,698 | 213,698 | 213,698 |
| Plus: 2024 Program changes | 18 | 13 | 161,174 | 161,174 | 161,174 |
| 2024 Estimate | 138 | 130 | 374,872 | 374,872 | 374,872 |

| **Comparison by activity with totals by activity** | | 2022 Actual | | 2023 Enacted | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Technology Innovation Program | Pos./Approp | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | FTE/Obl. | 0 | $3 | 0 | $71 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hollings Manufacturing Extension Partnership | Pos./Approp | 89 | 158,000 | 97 | 188,000 | 97 | $176,344 | 103 | $277,202 | 6 | 100,858 |
| | FTE/Obl. | 91 | 159,379 | 95 | 193,582 | 96 | 176,344 | 100 | 277,202 | 4 | 100,858 |
| Manufacturing USA | Pos/Approp | 18 | 16,500 | 34 | 51,000 | 23 | 37,354 | 35 | 97,670 | 12 | 60,316 |
| | FTE/Obl. | 13 | 18,657 | 28 | 52,343 | 21 | 37,354 | 30 | 97,670 | 9 | 60,316 |
| TOTALS | Pos./Approp | 107 | 174,500 | 131 | 239,000 | 120 | 213,698 | 138 | 374,872 | 18 | 161,174 |
| | FTE/Obl. | 104 | 178,039 | 123 | 245,996 | 117 | 213,698 | 130 | 374,872 | 13 | 161,174 |
| Adjustments for | | | | | | | | | | | |
| Recoveries | | | (4,100) | | 0 | | 0 | | 0 | | 0 |
| Refunds | | | (939) | | 0 | | 0 | | 0 | | 0 |
| Unobligated balance, start of year | | | (5,496) | | (6,996) | | 0 | | 0 | | 0 |
| Unobligated balance, end of year | | | 6,996 | | 0 | | 0 | | 0 | | 0 |
| Budget Authority/Appropriation | | | 174,500 | | 239,000 | | 213,698 | | 374,872 | | 161,174 |
| Adjustments for | | | | | | | | | | | |
| Plus restoration of cancellation of anticipated recoveries | | | 0 | | 0 | | 0 | | 0 | | 0 |
| Plus restoration of unobligated balances rescission | | | 0 | | 0 | | 0 | | 0 | | 0 |
| Appropriation | | | 174,500 | | 239,000 [1/] | | 213,698 | | 374,872 | | 161,174 |



[1/] Including enacted amount of $27M from the Disaster Relief Supplemental Appropriations Act, 2023.

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Exhibit 8

**Department of Commerce**
**National Institute of Standards and Technology**
**Industrial Technology Services**
**ADJUSTMENTS TO BASE**
(Dollar amounts in thousands)

| | Perm. Pos. | FTE | Amount |
|---|---|---|---|
| **Transfer** | ... | ... | 0 |
| **Adjustment** | ... | ... | 0 |
| **Financing** | ... | ... | 0 |
| **Other Changes:** | | | |
| FY 2023 pay raise | ... | ... | $239 |
| FY 2024 pay raise | ... | ... | 893 |
| Change in compensable days | ... | ... | 81 |
| Annualization of positions financed in FY 2023 | 0 | 2 | |
| Awards | ... | ... | 47 |
| Personnel benefits: | | | |
| Civil Service Retirement System (CSRS) | ... | ... | (1) |
| Federal Employees' Retirement System (FERS) | ... | ... | (26) |
| Thrift Savings Plan (TSP) | ... | ... | (3) |
| Federal Insurance Contribution Act (FICA) | ... | ... | (15) |
| Health insurance | ... | ... | 36 |
| Employees' Compensation Fund | ... | ... | 0 |
| Travel and transportation of persons: | | | |
| Mileage | ... | ... | 0 |
| Per Diem | ... | ... | 1 |
| Communications, utilities, and miscellaneous charges: | | | |
| HCHB Electricity | ... | ... | 0 |
| HCHB Water/Sewer | ... | ... | 0 |
| Electricity rate | ... | ... | 116 |
| Natural gas rate | ... | ... | 91 |
| Other services: | | | |
| Working Capital Fund Departmental Management | ... | ... | 0 |
| Cybersecurity (Non-Add in WCF) | | | [0] |
| NARA storage costs | ... | ... | 0 |
| General pricing level adjustment | ... | ... | 239 |
| Subtotal, Other Changes | 0 | 2 | 1,698 |
| Total, Adjustments to base | 0 | 2 | 1,698 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Industrial Technology Services**
**PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS**
(Dollar amounts in thousands)

Activity: Technology Innovation Program

| Line Item | | 2022 Actual | | 2023 Enacted | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Technology Innovation Program | Pos./Approp | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | FTE/Obl. | 0 | $3 | 0 | $71 | 0 | 0 | 0 | 0 | 0 | 0 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Industrial Technology Services**
**PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS**
(Dollar amounts in thousands)

Activity: Hollings Manufacturing Extension Partnership

| Line Item | | 2022 Actual | | 2023 Enacted | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Hollings Manufacturing | Pos./Approp | 89 | $158,000 | 97 | $188,000 [1/] | 97 | $176,344 | 103 | $277,202 | 6 | $100,858 |
| Extension Partnership | FTE/Obl. | 91 | 159,379 | 95 | 193,582 | 96 | 176,344 | 100 | 277,202 | 4 | 100,858 |

[1/] Including enacted amount of $13M from the Disaster Relief Supplemental Appropriations Act, 2023.

**Department of Commerce**
**National Institute of Standards and Technology**
**Industrial Technology Services**
**JUSTIFICATION OF PROGRAM AND PERFORMANCE**
(Dollar amounts in thousands)

Activity: Hollings Manufacturing Extension Partnership

## Goal Statement

The Hollings Manufacturing Extension Partnership Program (MEP) is a public-private partnership program that provides U.S. small and medium-sized manufacturers (SMMs) with access to industry experts, resources, and technology. The MEP program leverages a national approach to serve SMMs called the MEP National Network that includes NIST MEP staff, MEP Centers in every state and Puerto Rico, and other federal, state, local, academic, and industry partners. MEP Centers are the program's "boots-on-the-ground" and work directly with their local manufacturing communities to strengthen the competitiveness of the U.S. manufacturing base. MEP Centers are funded through a cost-sharing arrangement consisting of support from the Federal government, non-Federal sources including state and local government/entities, and fees charged to the manufacturing clients for services provided by the MEP Centers.

## Base Program

The national network of 51 MEP Centers developed a wide range of services and initiatives to enable manufacturers to identify opportunities that will accelerate and strengthen growth and competitiveness in the global marketplace. Each MEP Center works directly with area manufacturers to provide expertise and services such as product and market development tools and resources, lean consulting to improve operations and processes, supply chain optimization and supplier scouting, growth services, and customized workforce development services. MEP Centers also connect SMMs to new technologies, technical infrastructure, and specialized knowledge. In 2022, MEP Centers interacted with more than 33,500 manufacturers and delivered projects that lead to $18.8 billion in sales, $2.5 billion in cost savings, $6.4 billion in new client investments, and helped create or retain more than 116,700 jobs. Additionally, NIST MEP provides technical assistance in food safety best practices, accelerating the adoption of advanced manufacturing technologies, addressing emerging manufacturing needs, exporting and international business, advising on cybersecurity of supply chains, and transferring technology from NIST Laboratories and other Federal research organizations.

In 1988, Congress passed the Omnibus Trade and Competitiveness Act of 1988 (P.L. 100-418) that created a program within NIST to assist U.S. manufacturing through cooperative efforts. The statute was amended in the America COMPETES Acts of 2007 and 2010 and MEP was reauthorized through the American Innovation and Competitiveness Act (P.L. 114-329), which was signed into law January 2017. For over thirty years, MEP Centers have acted as the go-to experts to promote business growth and connect manufacturers to public and private resources essential for increased competitiveness and profitability. Since 1988, MEP has worked with over 142,000 manufacturers and MEP clients have reported $144.4 billion in new sales, $28.7 billion in cost savings, and over 1.5 million jobs that were created and retained since 1988.

**Examples of Accomplishments**

Program accomplishments and industry impact for the program can be found at: MEP National Network FY 22 Impacts Overview: (MEPNN FY22 Impacts Overview 3-09-23 WEB (nist.gov)

Statement of Operating Objectives

MEP will serve as the primary source of assistance for growth-oriented U.S.-based SMMs, supporting operationally resiliency and preparedness in responding to critical immediate and long-term needs.

Explanation and Justification

| Line Item | | 2022 Actual | | 2023 Enacted* | | 2024 Base | |
|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Hollings Manufacturing Extension Partnership | Pos./BA | 89 | $158,000 | 97 | $175,000 | 97 | $176,344 |
| | FTE/Obl | 91 | 159,379 | 95 | 180,582 | 96 | 176,344 |

*FY 2023 Enacted amounts does not include $13 million from the Disaster Relief Supplemental Appropriations Act, 2023.

- MEP plans to build on its tradition of delivering impactful services to SMMs, particularly growing the National Network's established activities that strengthen the U.S. manufacturing workforce. The MEP program identified three strategic goals in its new 2023-2027 MEP National Network Strategic Plan to strengthen U.S. manufacturing and empower SMMs. These goals are to mitigate supply chain vulnerabilities, narrow the workforce gap and leverage technology.
- MEP Centers assist SMMs to address supply chain challenges through supply chain mapping and risk assessments, supplier scouting, process improvement and supplier development, and procurement and supply chain management strategy services. In FY 2023, MEP will establish a National Supply Chain Optimization and Intelligence Network that scales supply chain expertise and proven solutions that deliver value to SMMs in every MEP Center and coordinates with large manufacturers for their downstream supplier opportunities.
- MEP Centers deliver customized workforce development solutions, such as industry-related certification, leadership trainings, upskilling, apprenticeships and comprehensive workforce services that help SMMs recruit, retrain, and retain in-demand manufacturing talent. In addition to workforce development projects delivered by the 51 MEP Centers, three were awarded over $2.7 million through FY 2023 to expand the availability and quality of K-12 programs to prepare students for manufacturing careers, increase diversity of manufacturing and engineering talent, and identify and scale up effective solutions for national workforce development improvement. With MEP Centers positioned as partners in critical workforce ecosystems throughout the U.S., MEP will lead by connecting local and national efforts to make manufacturers' workforces look more like our country in diversity, equity, inclusion, and accessibility.

- MEP Centers develop and deliver technical assistance to support the adoption of advanced manufacturing technology, such as Industry 4.0, digital manufacturing, flexible automation/collaborative robotics, artificial intelligence, additive manufacturing, and smart

  manufacturing. MEP Centers also deliver cybersecurity awareness, training, and technical assistance that are critical to the resilience of SMMs, especially for small defense contractors. MEP will continue to execute partnerships, for example with the Department of Defense, to serve thousands of U.S. defense contractors across the country.

- MEP Centers continue to focus on service delivery to rural manufacturers and to very small manufacturers (with fewer than 20 employees). MEP Centers will continue to focus on increasing the share of smaller clients that receive MEP services with a goal that over 50 percent of all completed projects are delivered to manufacturing clients with fewer than 50 employees. Similarly, MEP's goals include working with traditionally underserved populations including women-owned companies and minority-owned companies. MEP will enhance its services to these traditionally underserved populations because of MEP's increased emphasis on delivering assistance in the workforce development area.

- MEP Centers perform assessments of SMMs in areas subject to a FEMA Disaster Declaration. Assessments are designed to identify the impact, if any, to the operations of the SMMs as result of the subject disaster. MEP Centers assist impacted SMMs in identifying and accessing Federal, State and local resources to aid in business recovery efforts and, as appropriate, in the development of a risk mitigation plan for future disasters.

**Department of Commerce**
**National Institute of Standards and Technology**
**Industrial Technology Services**
**PROGRAM CHANGES FOR 2024**
(Dollar amounts in thousands)

| | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Hollings Manufacturing Extension Partnership Program | Pos/BA | 97 | 176,344 | 103 | 277,202 | 6 | 100,858 |
| | FTE/Obl. | 96 | 176,344 | 100 | 277,202 | 4 | 100,858 |

**Hollings Manufacturing Extension Partnership Program (+$100,858, 4 FTE/6 Positions)** - This request will be used to make noteworthy progress on three specific goals identified in the new 2023-2027 MEP National Network strategic plan to support a focused, national effort that strengthens U.S. manufacturing and empowers small and medium-sized manufacturers (SMMs). These goals are narrow the workforce gap, mitigate supply chains vulnerabilities, and leverage technology.

The national network of 51 MEP Centers delivers customized workforce development solutions, such as industry-related certification and leadership trainings, and comprehensive workforce services that help SMMs recruit, retrain, and retain in-demand manufacturing talent. Increased funding will be strategically invested in MEP Centers to build out apprenticeship, upskilling, and learning systems that support a globally competitive U.S. manufacturing workforce. This increased funding will also drive efforts to encourage a more diverse U.S. manufacturing workforce by focusing on underserved communities through collaborative partnerships with Historically Black Colleges and Universities (HBCUs), Minority-Serving Institutes (MSIs), and community colleges to develop industry training and in-demand skills.

MEP Centers assist SMMs to address supply chain challenges through supply chain mapping and risk assessments, supplier scouting, process improvement and supplier development, and procurement and supply chain management strategy services. With these additional funds, MEP will prop-up a National Supply Chain Optimization and Intelligence Network that scales supply chain expertise and proven solutions that deliver value to SMMs in every MEP Center. MEP will also deepen participation in national domestic manufacturing initiatives, like Buy America and Build America, that support a healthy domestic manufacturing base. New funding will build new capabilities for MEP Centers to support emerging technologies of national importance, such as semiconductors, by developing advance packaging (AP) mapping and services and assisting SMMs to pivot and provide ancillary services for AP activities.

MEP Centers help SMMs to adopt advanced manufacturing practices, new technologies, like robots and cobots, automation, Industry 4.0, and cybersecurity best practices. New funding will boost cybersecurity service delivery that support SMMs to adopt robust cybersecurity systems and adhere to industry standards. These new investments will also provide capacity for MEP Centers to coordinate locally and nationally to assist help SMMs pivot and integrate into larger supplier chains for emerging industries of national importance, such as semiconductors, lithium and electric vehicles, hydrogen economy, and healthcare.

Performance Measure:

Performance Measures

| | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|
| Number of firms receiving in-depth technical assistance from MEP Centers | | | | | |
| With increase | 15,000 | 16,500 | 17,325 | 18,025 | 18,575 |
| Without increase | 11,000 | 11,000 | 11,000 | 11,000 | 11,000 |
| New or retained sales ($) in key product and critical technology supply chains | | | | | |
| With increase | $1,000M | $1,100M | $1,155M | $1,200M | $1,237M |
| Without increase | $400M | $400M | $400M | $400M | $400M |

**Department of Commerce**
**National Institute of Standards and Technology**
**Industrial Technology Services**
**PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Hollings Manufacturing Extension Partnership
Program Change: Hollings Manufacturing Extension Partnership

| Full-time permanent | | | | | |
|---|---|---|---|---|---|
| Title | | Grade | Number | Annual Salary | Total Salaries |
| Supply Chain Expert | | ZA IV | 3 | 132,368 | 397,104 |
| Learning System Expert | | ZA IV | 3 | 132,368 | 397,104 |
| Total | | | 6 | | 794,208 |
| Less lapse | 25.00% | | (2) | | (198,552) |
| Total full-time permanent (FTE) | | | 4 | | 595,656 |
| 2024 pay Adjustment (5.2%) | | | | | 30,974 |
| | | | | | 626,630 |
| | | | | | |
| **Personnel Data Summary** | | | | | |
| Full-time Equivalent Employment (FTE) | | | | | |
| Full-time permanent | | | 4 | | |
| Part-time permanent | | | 0 | | |
| Full-time temporary | | | 0 | | |
| Part-time temporary | | | 0 | | |
| Total FTE | | | 4 | | |
| | | | | | |
| Authorized Positions | | | | | |
| Full-time permanent | | | 6 | | |
| Part-time permanent | | | 0 | | |
| Full-time temporary | | | 0 | | |
| Part-time temporary | | | 0 | | |
| Total Positions | | | 6 | | |
| | | | | | |

# Department of Commerce
# National Institute of Standards and Technology
# Industrial Technology Services
# PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Direct Obligations amounts in thousands)

Activity: Hollings Manufacturing Extension Partnership

| | Object Class | 2022 Actuals | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 11.1 | Full-time permanent compensation | 11,598 | 12,708 | 13,385 | 14,012 | 627 |
| 11.3 | Other than full-time permanent | 810 | 844 | 889 | 889 | 0 |
| 11.5 | Other personnel compensation | 262 | 343 | 368 | 368 | 0 |
| 11.8 | Special personnel services payments | 0 | 0 | 0 | 0 | 0 |
| 11.9 | Total personnel compensation | 12,670 | 13,895 | 14,642 | 15,269 | 627 |
| 12.1 | Civilian personnel benefits | 4,491 | 4,794 | 5,042 | 5,248 | 206 |
| 13 | Benefits for former personnel | 0 | 0 | 0 | 0 | 0 |
| 21 | Travel and transportation of persons | 163 | 180 | 181 | 266 | 85 |
| 22 | Transportation of things | 45 | 47 | 48 | 52 | 4 |
| 23 | Rent, communications, and utilities | 0 | 0 | 0 | 0 | 0 |
| 23.1 | Rental payments to GSA | 4 | 4 | 4 | 4 | 0 |
| 23.2 | Rental payments to others | 0 | 0 | 0 | 0 | 0 |
| 23.3 | Communications, utilities, and misc. charges | 1,231 | 1,681 | 1,839 | 4,193 | 2,354 |
| 24 | Printing and reproduction | 23 | 29 | 30 | 43 | 13 |
| 25 | Other contractual services | 0 | 0 | 0 | 0 | 0 |
| 25.1 | Advisory and assistance services | 0 | 0 | 0 | 0 | 0 |
| 25.2 | Other services from non-Federal sources | 5,574 | 5,374 | 6,419 | 11,407 | 4,988 |
| 25.3 | Other goods and services from Federal sources | 1,171 | 1,671 | 1,685 | 2,159 | 474 |
| 25.4 | Operation and maintenance of facilities | 0 | 0 | 0 | 0 | 0 |
| 25.5 | Research and development contracts | 0 | 0 | 0 | 0 | 0 |
| 25.6 | Medical care | 0 | 0 | 0 | 0 | 0 |
| 25.7 | Operation and maintenance of equipment | 540 | 670 | 683 | 955 | 272 |
| 25.8 | Subsistence and support of persons | 0 | 0 | 0 | 0 | 0 |
| 26 | Supplies and materials | 779 | 1,053 | 1,074 | 1,678 | 604 |
| 31 | Equipment | 688 | 743 | 758 | 889 | 131 |
| 32 | Lands and structures | 0 | 0 | 0 | 0 | 0 |
| 33 | Investments and loans | 0 | 0 | 0 | 0 | 0 |
| 41 | Grants, subsidies and contributions | 132,000 | 150,441 | 143,939 | 235,039 | 91,100 |
| 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 |
| 99.9 | Total obligations | 159,379 | 180,582 | 176,344 | 277,202 | 100,858 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Industrial Technology Services**
**PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS**
(Dollar amounts in thousands)

Activity: Manufacturing USA

| Line Item | | 2022 Actual | | 2023 Enacted | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Manufacturing USA | Pos./Approp | 18 | $16,500 | 34 | $51,000 [1/] | 23 | $37,354 | 35 | $97,670 | 12 | $60,316 |
| | FTE/Obl. | 13 | 18,657 | 28 | 52,343 | 21 | 37,354 | 30 | 97,670 | 9 | 60,316 |

[1/] Including enacted amount of $14M from the Disaster Relief Supplemental Appropriations Act, 2023.

**Department of Commerce**
**National Institute of Standards and Technology**
**Industrial Technology Services**
**JUSTIFICATION OF PROGRAM AND PERFORMANCE**
(Dollar amounts in thousands)

Activity: Manufacturing USA

## Goal Statement

The primary goal of the Manufacturing USA program is to develop new manufacturing technologies for rapid scale up of U.S. discoveries. Industry and academic researchers work together to create advanced manufacturing products and processes that benefit entire industry sectors in areas of critical national needs. Another major goal is workforce training and upskilling current workers in new and advanced technology, including training veterans and disadvantaged communities for high-skill, high-paying jobs of the advanced manufacturing workforce.

## Base Program

The base request provides funds for Federal investment in the Manufacturing USA program which increases U.S. global competitiveness by creating an effective public-private manufacturing research infrastructure for U.S. industry and academia to solve critical manufacturing challenges. Manufacturing USA consists of industry-led institutes with Federal funding matched by an equal or greater amount of non-Federal support over a 5 to 7-year period. Federal sponsorship may be renewed after a rigorous assessment process.

Each institute has a unique technical concentration that can benefit by improving commercial production in an entire industry sector. Industry, academia, and government partners leverage existing resources, collaborate, and co-invest to nurture manufacturing innovation and accelerate commercialization. As an anchor for sustainable manufacturing innovation hubs, the institutes create, showcase, and deploy new capabilities, new products, and new processes. They build workforce skills at all levels and enhance manufacturing capabilities in companies (large and small). While the institutes provide a network for stakeholders to leverage existing resources, collaborate, and co-invest, the development of commercial applications is left to the private sector, which gains the tools (manufacturing processes) to make their products.

The budget request continues program coordination and network support of Manufacturing USA institutes, which at the end of FY 2023 should stand at 17 institutes, including 16 sponsored by the Department of Defense (DoD) and Department of Energy (DOE). The request also continues the role of the Department of Commerce (DOC) sponsored institute authorized by the Revitalize American Manufacturing and Innovation Act, as reauthorized in December 2019, and allows continued funding of a second DOC institute competed in FY 2023.

### Examples of Accomplishments

Program accomplishments and industry impact for the program can be found at: https://www.manufacturingusa.com/.

## Statement of Operating Objectives

As part of efforts to revitalize U.S. manufacturing and ensure U.S. global leadership, NIST proposed and Congress authorized a network of manufacturing innovation institutes where researchers, companies, universities, community colleges, and entrepreneurs come together to develop new manufacturing technologies with broad applications. These institutes also train the workforce, including returning veterans, needed to address a shortage of qualified workers in advanced manufacturing industries. The primary objective is to ensure that American innovations and inventions, currently going offshore for production, would be scaled up from laboratory experiments to an industrial level in the U.S. by developing new manufacturing processes to be used by entire industry sectors. The program is designed to meet broad industry needs across sectors, with priority given to address national advanced manufacturing-related needs, such as artificial intelligence, cybersecurity, and quantum information.

Each Manufacturing USA institute has a unique technology focus with the objective of creating robust regional manufacturing hubs that have national impact. The institutes support an ecosystem of manufacturing activity in regions of the U.S., enabling redevelopment of domestic supply chains in areas of advanced technology. The Manufacturing USA institutes support manufacturing technology commercialization by helping to bridge the gap from the laboratory to the market, and address core gaps in scaling U.S. manufacturing process technologies.

## Explanation and Justification

| **Line Item** | | 2022 Actual | | 2023 Enacted* | | 2024 Base | |
|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Manufacturing USA | Pos./BA | 18 | $16,500 | 23 | $37,000 | 23 | $37,354 |
| | FTE/Obl | 13 | 18,657 | 20 | 38,343 | 21 | 37,354 |

*FY 2023 Enacted amount excludes $14 million in Disaster Relief Supplemental Funding.

Manufacturing USA promotes direct and broad collaboration on industry relevant research and development to make sure that innovations developed in the U.S. are also manufactured in the U.S. rather than other countries. Institutes facilitate the adoption of new manufacturing technologies, tools, and methodologies that make U.S. manufacturers more competitive. Manufacturing USA emphasizes outreach and engagement with small and medium sized manufacturing enterprises. DOC's industry driven Innovation Institutes bridge a key market failure in the U.S. innovation ecosystem which is even more pronounced in advanced manufacturing. U.S. manufacturers individually are challenged to fund these technological development functions, and small manufacturers especially struggle with individually investing in prototyping and scale up of new technologies and products.

NIST is required by Congress to convene, support, and coordinate the network of all Manufacturing USA institutes, including the existing institutes at the Department of Defense and Department of Energy. Manufacturing USA is specified in the White House *National Strategy for Advanced Manufacturing* (2022) as the means for achieving many of the key national objectives necessary for the U.S. to maintain a competitive manufacturing sector. Failure to maintain support for this initiative could lead to a loss of U.S. competitiveness in this sector as other countries are increasingly adept at technology transfer and scaling to production.

**Department of Commerce**
**National Institute of Standards and Technology**
**Industrial Technology Services**
**PROGRAM CHANGES FOR 2024**
(Dollar amounts in thousands)

| | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Manufacturing USA | Pos/BA | 23 | 37,354 | 35 | $97,670 | 12 | $60,316 |
| | FTE/Obl. | 21 | 37,354 | 30 | 97,670 | 9 | 60,316 |

**Fund Essential Support for Manufacturing USA Institutes (+$60,316, 9 FTE/12 Positions):** The requested funds provide critical support for the 16 existing Manufacturing USA institutes, allowing full benefit to the nation's manufacturing ecosystem from this national network of public-private partnerships. The funds will allow the creation and operation of testbeds at Manufacturing USA institutes and support emerging priority areas, such as manufacturing technology development, transfer of technology to manufacturers, and engagement of underserved communities in the network's technology and education and workforce development program.

The request strengthens Manufacturing USA, which was created by Congress to revitalize U.S. manufacturing and global competitiveness. The $60.316 million increase augments the $37.354 million in base funding to help restore the United States as the leader in technology areas essential to economic and national security.

Manufacturing USA promotes direct and broad collaboration on industry-relevant research and development to make sure that innovations developed in the U.S. are also manufactured in the U.S. rather than other countries. The required activities of the program include an emphasis on the engagement of small-and-medium manufacturing enterprises (SMEs) who often struggle with prototyping and scale-up of new technologies and products. The increased availability of testbeds, which can test new manufacturing techniques and serve as workforce training centers, will improve access by SMEs to specialized equipment and also extend the geographic reach of the network's programs to regions of the country and communities, currently underrepresented in manufacturing. These shared state-of-the-art facilities to support industry sectors that increasingly rely on advanced manufacturing technologies are especially powerful for hands-on workforce training needed to build an equitable, diverse, and sustainable pipeline of skilled workers, including for veterans, women, individuals with disabilities, and minorities. Without the increased funding, DOC will not be able to establish any new testbeds within the Manufacturing USA network, limiting the growth and impact of a program with proven impact. Similarly, without the increased funding, DOC will not be able to support needed priorities such as critical technology development, scale-up of institute-developed technology for use by manufacturers, engagement of underserved communities, or workforce development.

Performance Measure:

| | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|
| Number of testbeds supported with increase | 2 | 4 | 6 | 8 | 10 |
| Number of testbeds supported without increase | 0 | 0 | 0 | 0 | 0 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Industrial Technology Services**
**PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Manufacturing USA
Program Change: Manufacturing USA

| Full-time permanent | | | | | |
|---|---|---|---|---|---|
| Title | | Grade | Number | Annual Salary | Total Salaries |
| Program Manager | | ZP V | 4 | 155,700 | 622,800 |
| Program Support | | ZA IV | 4 | 132,368 | 529,472 |
| Administrative Officer | | ZA III | 1 | 94,199 | 94,199 |
| Administrative Office Assistant | | ZS IV | 1 | 58,811 | 58,811 |
| Program Coordinator | | ZP V | 1 | 155,700 | 155,700 |
| Administrative/technical support | | ZA II | 1 | 71,531 | 71,531 |
| Total | | | 12 | | 1,532,513 |
| Less lapse | 25.00% | | (3) | | (383,128) |
| Total full-time permanent (FTE) | | | 9 | | 1,149,385 |
| 2024 pay Adjustment (5.2%) | | | | | 59,768 |
| | | | | | 1,209,153 |
| | | | | | |
| **Personnel Data Summary** | | | | | |
| Full-time Equivalent Employment (FTE) | | | | | |
| Full-time permanent | | | 9 | | |
| Part-time permanent | | | 0 | | |
| Full-time temporary | | | 0 | | |
| Part-time temporary | | | 0 | | |
| Total FTE | | | 9 | | |
| | | | | | |
| Authorized Positions | | | | | |
| Full-time permanent | | | 12 | | |
| Part-time permanent | | | 0 | | |
| Full-time temporary | | | 0 | | |
| Part-time temporary | | | 0 | | |
| Total Positions | | | 12 | | |
| | | | | | |

# Department of Commerce
# National Institute of Standards and Technology
# Industrial Technology Services
# PROGRAM CHANGE DETAIL BY OBJECT CLASS

(Direct Obligations amounts in thousands)

Activity: Manufacturing USA

| | Object Class | 2022 Actuals | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 11.1 | Full-time permanent compensation | 1,271 | 3,131 | 3,293 | 4,502 | 1,209 |
| 11.3 | Other than full-time permanent | 0 | 0 | 0 | 0 | 0 |
| 11.5 | Other personnel compensation | 41 | 48 | 86 | 86 | 0 |
| 11.8 | Special personnel services payments | 0 | 0 | 0 | 0 | 0 |
| 11.9 | Total personnel compensation | 1,312 | 3,179 | 3,379 | 4,588 | 1,209 |
| 12.1 | Civilian personnel benefits | 906 | 1,160 | 1,217 | 1,615 | 398 |
| 13 | Benefits for former personnel | 0 | 0 | 0 | 0 | 0 |
| 21 | Travel and transportation of persons | 8 | 34 | 35 | 93 | 58 |
| 22 | Transportation of things | 14 | 25 | 26 | 38 | 12 |
| 23 | Rent, communications, and utilities | 0 | 0 | 0 | 0 | 0 |
| 23.1 | Rental payments to GSA | 1 | 1 | 1 | 1 | 0 |
| 23.2 | Rental payments to others | 0 | 0 | 0 | 0 | 0 |
| 23.3 | Communications, utilities, and misc. charges | 137 | 655 | 715 | 2,116 | 1,401 |
| 24 | Printing and reproduction | 2 | 18 | 18 | 39 | 21 |
| 25 | Other contractual services | 0 | 0 | 0 | 0 | 0 |
| 25.1 | Advisory and assistance services | 0 | 0 | 0 | 0 | 0 |
| 25.2 | Other services from non-Federal sources | 1,490 | 1,221 | 1,244 | 2,217 | 973 |
| 25.3 | Other goods and services from Federal sources | 192 | 320 | 323 | 568 | 245 |
| 25.4 | Operation and maintenance of facilities | 0 | 0 | 0 | 0 | 0 |
| 25.5 | Research and development contracts | 4 | 4 | 8 | 8 | 0 |
| 25.6 | Medical care | 0 | 0 | 0 | 0 | 0 |
| 25.7 | Operation and maintenance of equipment | 75 | 194 | 195 | 330 | 135 |
| 25.8 | Subsistence and support of persons | 0 | 0 | 0 | 0 | 0 |
| 26 | Supplies and materials | 31 | 88 | 90 | 224 | 134 |
| 31 | Equipment | 50 | 109 | 111 | 227 | 116 |
| 32 | Lands and structures | 0 | 0 | 0 | 0 | 0 |
| 33 | Investments and loans | 0 | 0 | 0 | 0 | 0 |
| 41 | Grants, subsidies and contributions | 14,435 | 29,992 | 29,992 | 85,606 | 55,614 |
| 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 |
| 99.9 | Total obligations | 18,657 | 37,000 | 37,354 | 97,670 | 60,316 |

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**Department of Commerce**
**National Institute of Standards and Technology**
**Industrial Technology Services**
**SUMMARY OF REQUIREMENTS BY OBJECT CLASS**
(Dollar amounts in thousands)

| | Object Class | 2022 Actual | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 11 | Personnel compensation | | | | | |
| 11.1 | Full-time permanent | $12,869 | $15,839 | $16,678 | $18,513 | $1,835 |
| 11.3 | Other than full-time permanent | 810 | 844 | 889 | 889 | 0 |
| 11.5 | Other personnel compensation | 303 | 391 | 454 | 454 | 0 |
| 11.9 | **Total personnel compensation** | 13,982 | 17,074 | 18,021 | 19,856 | 1,835 |
| 12.1 | Civilian personnel benefits | 5,397 | 5,954 | 6,259 | 6,863 | 604 |
| 13 | Benefits for former personnel | 0 | 0 | 0 | 0 | 0 |
| 21 | Travel and transportation of persons | 171 | 214 | 216 | 359 | 143 |
| 22 | Transportation of things | 59 | 72 | 74 | 90 | 16 |
| 23.1 | Rental payments to GSA | 5 | 5 | 5 | 5 | 0 |
| 23.2 | Rental payments to others | 0 | 0 | 0 | 0 | 0 |
| 23.3 | Communications, utilities, and miscellaneous charges | 1,368 | 2,336 | 2,554 | 6,310 | 3,756 |
| 24 | Printing and reproduction | 25 | 47 | 48 | 82 | 34 |
| 25.1 | Advisory and assistance services | 0 | 0 | 0 | 0 | 0 |
| 25.2 | Other services from non-Federal sources | 7,067 | 6,666 | 6,743 | 12,703 | 5,960 |
| 25.3 | Other goods and services from Federal sources | 1,363 | 1,991 | 2,008 | 2,727 | 719 |
| 25.5 | Research and development contracts | 4 | 4 | 8 | 8 | 0 |
| 25.7 | Operation and maintenance of equipment | 615 | 864 | 878 | 1,285 | 407 |
| 26 | Supplies and materials | 810 | 1,141 | 1,164 | 1,902 | 738 |
| 31 | Equipment | 738 | 852 | 869 | 1,117 | 248 |
| 32 | Land and structures | 0 | 0 | 0 | 0 | 0 |
| 41 | Grants, subsidies, and contributions | 146,435 | 181,776 | 174,851 | 321,565 | 146,714 |
| 43 | Interest and dividends | 0 | 0 | 0 | 0 | 0 |
| 99 | Total Obligations | 178,039 | 218,996 | 213,698 | 374,872 | 161,174 |

| | Object Class | 2022 Actual | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 99 | Total Obligations | $178,039 | $218,996 | $213,698 | $374,872 | $161,174 |
| | Prior year recoveries | (4,100) | 0 | | 0 | 0 |
| | Less prior year refunds | (939) | 0 | 0 | 0 | 0 |
| | Less prior year unobligated balance | (5,496) | (6,996) | 0 | 0 | 0 |
| | Plus unobligated balance end of year | 6,996 | 0 | | 0 | 0 |
| | Anticipated recoveries | 0 | 0 | 0 | 0 | 0 |
| | Total Budget Authority/Appropriation | 174,500 | 212,000 | 213,698 | 374,872 | 161,174 |
| | Personnel Data | | | | | |
| | Full-time equivalent employment: | | | | | |
| | Full-time permanent | 94 | 105 | 107 | 120 | 13 |
| | Other than full-time permanent | 10 | 10 | 10 | 10 | 0 |
| | Total | 104 | 115 | 117 | 130 | 13 |
| | Authorized Positions: | | | | | |
| | Full-time permanent | 105 | 118 | 118 | 136 | 18 |
| | Other than full-time permanent | 22 | 22 | | | 0 |
| | Total | 107 | 120 | 120 | 138 | 18 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Industrial Technology Services**
**Activity/Subactivity/Line Item: Hollings Manufacturing Extension Partnership**
**SELECT ACTIVITIES BY OBJECT CLASS**
(Dollar amounts in thousands)

| | Object Class | 2022 Actual | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 11 | Personnel compensation | | | | | |
| 11.1 | Full-time permanent | $11,598 | $12,708 | $13,385 | $14,012 | $627 |
| 11.3 | Other than full-time permanent | 810 | 844 | 889 | 889 | 0 |
| 11.5 | Other personnel compensation | 262 | 343 | 368 | 368 | 0 |
| 11.9 | **Total personnel compensation** | 12,670 | 13,895 | 14,642 | 15,269 | 627 |
| 12.1 | Civilian personnel benefits | 4,491 | 4,794 | 5,042 | 5,248 | 206 |
| 13 | Benefits for former personnel | 0 | 0 | 0 | 0 | 0 |
| 21 | Travel and transportation of persons | 163 | 180 | 181 | 266 | 85 |
| 22 | Transportation of things | 45 | 47 | 48 | 52 | 4 |
| 23.1 | Rental payments to GSA | 4 | 4 | 4 | 4 | 0 |
| 23.2 | Rental payments to others | 0 | 0 | 0 | 0 | 0 |
| 23.3 | Communications, utilities, and miscellaneous charges | 1,231 | 1,681 | 1,839 | 4,193 | 2,354 |
| 24 | Printing and reproduction | 23 | 29 | 30 | 43 | 13 |
| 25.1 | Advisory and assistance services | 0 | 0 | 0 | 0 | 0 |
| 25.2 | Other services from non-Federal sources | 5,574 | 5,374 | 5,499 | 10,487 | 4,988 |
| 25.3 | Other goods and services from Federal sources | 1,171 | 1,671 | 1,685 | 2,159 | 474 |
| 25.5 | Research and development contracts | 0 | 0 | 0 | 0 | 0 |
| 25.7 | Operation and maintenance of equipment | 540 | 670 | 683 | 955 | 272 |
| 26 | Supplies and materials | 779 | 1,053 | 1,074 | 1,678 | 604 |
| 31 | Equipment | 688 | 743 | 758 | 889 | 131 |
| 32 | Land and structures | 0 | 0 | 0 | 0 | 0 |
| 41 | Grants, subsidies, and contributions | 132,000 | 150,441 | 144,859 | 235,959 | 91,100 |
| 43 | Interest and dividends | 0 | 0 | 0 | 0 | 0 |
| 99 | Total Obligations | 159,379 | 180,582 | 176,344 | 277,202 | 100,858 |

| | Object Class | 2022 Actual | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 99 | Total Obligations | $159,379 | $180,582 | $176,344 | $277,202 | $100,858 |
| | Less prior year recoveries | (4,028) | 0 | 0 | 0 | 0 |
| | Less prior year refunds | (938) | 0 | 0 | 0 | 0 |
| | Less prior year unobligated balance | (1,995) | (5,582) | 0 | 0 | 0 |
| | Plus unobligated balance end of year | 5,582 | 0 | 0 | 0 | 0 |
| | Less anticipated recoveries | 0 | 0 | 0 | 0 | 0 |
| | Total Budget Authority/Appropriation | 158,000 | 175,000 | 176,344 | 277,202 | 100,858 |
| | Personnel Data | | | | | |
| | Full-time equivalent employment: | | | | | |
| | Full-time permanent | 82 | 86 | 87 | 91 | 4 |
| | Other than full-time permanent | 9 | 9 | 9 | 9 | 0 |
| | Total | 91 | 95 | 96 | 100 | 4 |
| | Authorized Positions: | | | | | |
| | Full-time permanent | 87 | 95 | 95 | 101 | 6 |
| | Other than full-time permanent | 2 | 2 | 2 | 2 | 0 |
| | Total | 89 | 97 | 97 | 103 | 6 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Industrial Technology Services**
**Activity/Subactivity/Line Item: Manufacturing USA**
**SELECT ACTIVITIES BY OBJECT CLASS**
(Dollar amounts in thousands)

| | Object Class | 2022 Actual | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 11 | Personnel compensation | | | | | |
| 11.1 | Full-time permanent | $1,271 | $3,131 | $3,293 | $4,502 | $1,209 |
| 11.3 | Other than full-time permanent | 0 | 0 | 0 | 0 | 0 |
| 11.5 | Other personnel compensation | 41 | 48 | 86 | 86 | 0 |
| 11.9 | **Total personnel compensation** | 1,312 | 3,179 | 3,379 | 4,588 | 1,209 |
| 12.1 | Civilian personnel benefits | 906 | 1,160 | 1,217 | 1,615 | 398 |
| 13 | Benefits for former personnel | 0 | 0 | 0 | 0 | 0 |
| 21 | Travel and transportation of persons | 8 | 34 | 35 | 93 | 58 |
| 22 | Transportation of things | 14 | 25 | 26 | 38 | 12 |
| 23.1 | Rental payments to GSA | 1 | 1 | 1 | 1 | 0 |
| 23.2 | Rental payments to others | 0 | 0 | 0 | 0 | 0 |
| 23.3 | Communications, utilities, and miscellaneous charges | 137 | 655 | 715 | 2,116 | 1,401 |
| 24 | Printing and reproduction | 2 | 18 | 18 | 39 | 21 |
| 25.1 | Advisory and assistance services | 0 | 0 | 0 | 0 | 0 |
| 25.2 | Other services from non-Federal sources | 1,490 | 1,221 | 1,244 | 2,217 | 973 |
| 25.3 | Other goods and services from Federal sources | 192 | 320 | 323 | 568 | 245 |
| 25.5 | Research and development contracts | 4 | 4 | 8 | 8 | 0 |
| 25.7 | Operation and maintenance of equipment | 75 | 194 | 195 | 330 | 135 |
| 26 | Supplies and materials | 31 | 88 | 90 | 224 | 134 |
| 31 | Equipment | 50 | 109 | 111 | 227 | 116 |
| 32 | Land and structures | 0 | 0 | 0 | 0 | 0 |
| 41 | Grants, subsidies, and contributions | 14,435 | 31,335 | 29,992 | 85,606 | 55,614 |
| 42 | Insurance claims and indemnities | 0 | 0 | 0 | 0 | 0 |
| 43 | Interest and dividends | 0 | 0 | 0 | 0 | 0 |
| 99 | Total Obligations | 18,657 | 38,343 | 37,354 | 97,670 | 60,316 |

| | Object Class | 2022 Actual | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 99 | Total Obligations | $18,657 | $38,343 | $37,354 | $97,670 | $60,316 |
| | Less prior year recoveries | 0 | 0 | 0 | 0 | 0 |
| | Less prior year refunds | 0 | 0 | 0 | 0 | 0 |
| | Less prior year unobligated balance | (3,500) | (1,343) | 0 | 0 | 0 |
| | Plus unobligated balance end of year | 1,343 | 0 | 0 | 0 | 0 |
| | | | 0 | | | |
| | Total Budget Authority/Appropriation | 16,500 | 37,000 | 37,354 | 97,670 | 60,316 |
| | Offset or recoveries of prior year obligations (P.L. 115-31) | 0 | 0 | 0 | 0 | 0 |
| | Plus Unobligated Balance Rescission | 0 | 0 | 0 | 0 | 0 |
| | Total Appropriation | 16,500 | 37,000 | 37,354 | 97,670 | 60,316 |

Personnel Data

| | | | | | |
|---|---|---|---|---|---|
| Full-time equivalent employment: | | | | | |
| Full-time permanent | 12 | 19 | 20 | 29 | 9 |
| Other than full-time permanent | 1 | 1 | 1 | 1 | 0 |
| Total | 13 | 20 | 21 | 30 | 9 |
| Authorized Positions: | | | | | |
| Full-time permanent | 18 | 23 | 23 | 35 | 12 |
| Other than full-time permanent | 0 | 0 | 0 | 0 | 0 |
| Total | 18 | 23 | 23 | 35 | 12 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Industrial Technology Services**
**APPROPRIATION LANGUAGE AND CODE CITATIONS**

1. For necessary expenses of the Industrial Technology Services appropriation of the National Institute of Standards and Technology,

15 U.S.C. 271 et seq.
15 U.S.C. 272(b)(1) and (b)(4)
15 U.S.C. 278b
15 U.S.C. 278k
15 U.S.C. 278l
15 U.S.C. 278n
15 U.S.C. 278r
15 U.S.C. 7506(a)(2)

15 U.S.C. 271 et seq. provides NIST's organic authorities.

15 U.S.C. 272(b)(1) authorizes the Secretary, through the Director of NIST, to assist industry in the development of technology and procedures needed to improve quality, to modernize manufacturing processes, to ensure product reliability, manufacturability, functionality, and cost-effectiveness, and to facilitate more rapid commercialization, especially by small- and medium-sized companies throughout the United States, of products based on new scientific discoveries in fields such as automation, electronics, advanced materials, biotechnology, and optical technologies.

15 U.S.C. 272(b)(4) authorizes the Secretary, through the Director of NIST, to enter into contracts, including cooperative research and development arrangements and grants and cooperative agreements, in furtherance of the purposes of the NIST Act.

15 U.S.C. 278b provides for a Working Capital Fund to support NIST activities.

15 U.S.C. 278k directs the Secretary, through the Director of NIST, to provide assistance for the creation of Regional Centers for the Transfer of Manufacturing Technology.

15 U.S.C. 278l provides authority for technical assistance to State technology programs.

15 U.S.C. 278n established the Advanced Technology Program within NIST to assist U.S. businesses in applying generic technology and research results to commercialize scientific discoveries and refine manufacturing technologies. Public Law 110-69 signed on August 9, 2007, has now abolished the Advanced Technology Program (ATP).

15 U.S.C. 7506(a)(2) instructs the NIST Director to utilize the Manufacturing Extension Partnership program to the extent possible to ensure that basic research on issues related to the development and manufacture of nanotechnology, including metrology; reliability and quality assurance; processes control; and manufacturing best practices reaches small- and medium-sized manufacturing companies.

2. For necessary expenses for industrial technology services, $374,872,000, to remain available until expended, of which $277,202,000 shall be for the Hollings Manufacturing Extension Partnership, and of which $97,670,000 shall be for the Manufacturing USA Program (formerly known as the National Network for Manufacturing Innovation).

3. Public Law 110-69, America Competes Act, 121 Stat 572, enacted August 9, 2007, reauthorized the Industrial Technology Services appropriation through 2010. In addition, it eliminated the Advanced Technology Program (ATP) and established the Technology Innovation Program (TIP) which provides grants to eligible companies or joint ventures whose proposed technology has strong potential to address critical national needs. It also amended 15 U.S.C. 3711 by changing the name of the National Medal of Technology from "Technology Medal" to "Technology and Innovation Medal".

4. Public Law 111-358, America Competes Reauthorization Act, 2010, 124 Stat 3982, enacted January 4, 2011, reauthorized the Industrial Technology Services appropriation through 2013 to include the Manufacturing Extension Partnership Program (MEP) and the Malcolm Baldrige National Quality Award program. In addition, authorization is provided for an Innovative Services Initiative to assist small and medium-sized manufacturers within the MEP program.

5. Public Law 112-55, Consolidated and Further Continuing Appropriations Act, 2012, 125 Stat 552, enacted November 18, 2011, did not contain funding for the Technology Innovation Program (TIP) and the Baldrige Performance Excellence Program (BPEP).

6. Public Law 113-235, Consolidated and Further Continuing Appropriations Act, 2015, 128 Stat 2130, enacted December 16, 2014 amends 15 U.S.C. 271 et seq by establishing the Network for Manufacturing Innovation Program within the Industrial Technology Services appropriation to facilitate access to capital-intensive infrastructure in order to transition innovative technologies into scalable, cost-effective, and high-performing manufacturing capabilities thereby stimulating U.S. leadership in advanced manufacturing research, innovation, and technology. As part of the program, the Secretary shall establish a network of centers for manufacturing innovation. Funding for the program is as follows: "to the extent provided for in advance by appropriations Acts the Secretary may use not to exceed $5,000,000 for each of the fiscal years 2015 through 2024 to carry out this section from amounts appropriated to the Institute for Industrial Technical Services" and, "to the extent provided for in advance by appropriations Acts, the Secretary of Energy may transfer to the Institute not to exceed $250,000,000 for the period encompassing fiscal years 2015 through 2024 from amounts appropriated for advanced manufacturing research and development within the Energy Efficiency and Renewable Energy account for the Department of Energy."

7. Public Law 114-113, Consolidated Appropriations Act, 2016, enacted on December 18, 2015, did not contain funding for the Advanced Manufacturing Technology Consortia. The accompanying Explanatory Statement contained language which moved the program into the National Network for Manufacturing Innovation as follows: "The agreement also merges the activities of the Advanced Manufacturing Technology Consortia (AMTech) into NNMI (National Network for Manufacturing Innovation)."

8. Public Law 116-136, The Coronavirus Aid, Relief, and Economic Security Act, (CARES Act), as enacted March 27, 2020 made available funding, $60,000,000 for Industrial Technology Services, “to remain available until September 30, 2021, to prevent, prepare for, and respond to coronavirus, domestically or internationally: *Provided,* That of the amount provided under this heading in this Act, $50,000,000 shall be for the Hollings Manufacturing Extension Partnership to assist manufacturers to prevent, prepare for, and respond to coronavirus and $10,000,000 shall be for the National Network for Manufacturing Innovation (also known as “Manufacturing USA”) to prevent, prepare for, and respond to coronavirus, including to support development and manufacturing of medical counter-measures and biomedical equipment and supplies.”

9. Public Law 117-238, Consolidated Appropriations Act, 2023 made available funding to include $27,000,000 to remain available until expended, and specific to implement the Research and Development, Competition, and Innovation Act (division B of Public Law 117-167), of which $13,000,000 shall be for the Hollings Manufacturing Extension Partnership, and of which $14,000,000 shall be for the Manufacturing USA Program.

**Department of Commerce**
**National Institute of Standards and Technology**
**Industrial Technology Services**
**ADVISORY AND ASSISTANCE SERVICES**
(Obligations in thousands of dollars)

| | FY 2022 Actual | FY 2023 Enacted | FY 2024 Estimate |
|---|---|---|---|
| Consulting Services | | | |
| Management and professional support services | 0 | 0 | 0 |
| Studies, analyses, and evaluations | 0 | 0 | 0 |
| Engineering and technical services | 0 | 0 | 0 |
| Total | 0 | 0 | 0 |

## Significant Activities

Advisory and assistance services funded by the Industrial Technology Services appropriation are used to conduct evaluations of the programmatic outcomes, service delivery efficiency, and internal infrastructure requirements of the MEP Program.

## Need for Advisory and Assistance Services

The need for advisory and assistance services stems from the role of NIST's extramural programs with its outside partners and small businesses to relate to the private sector, professional organizations, and the public sector. Inputs must be obtained from consultants who can bring their individual expertise to bear and help NIST in assessing its program plans to meet the needs of its customers. The alternative to utilizing these services is to make no attempt to have expertise from sources outside NIST and risk having a poorer working and professional relationship with those in the business of using the products and services offered by NIST. These services provide for economic assessment and external evaluation of NIST's extramural programs.

**Department of Commerce**
**National Institute of Standards and Technology**
**Construction of Research Facilities**
**SUMMARY OF RESOURCE REQUIREMENTS**
(Dollar amounts in thousands)

| | Positions | FTE | Budget Authority | Direct Obligations | Appro-priation |
|---|---|---|---|---|---|
| Enacted, 2023 | 156 | 151 | $462,285 | $656,259 | $462,285 |
| Less: Unobligated balance from prior year | 0 | 0 | (193,974) | (193,974) | (193,974) |
| less: Unobligated balance transfer from ITS | 0 | 0 | 0 | 0 | 0 |
| 2024 Adjustments to Base | | | | | |
| Plus: Inflationary adjustments to base | 0 | 0 | 3,539 | 3,539 | 3,539 |
| 2024 Base | 156 | 151 | 462,285 | 462,285 | 462,285 |
| Plus: 2024 Program changes | (4) | (3) | (203,676) | (203,676) | (203,676) |
| 2024 Estimate | 152 | 148 | 262,148 | 262,148 | 262,148 |

| **Comparison by activity/subactivity with totals by activity** | | 2022 Actuals | | 2023 Enacted | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Construction and Major Renovations | | | | | | | | | | | |
| Construction and Major | Pos/Approp | 152 | $205,563 | 156 | $462,285 | 156 | $465,824 | 152 | $262,148 | (4) | ($203,676) |
| Renovations | FTE/Obl. | 145 | 96,171 | 151 | 656,259 | 151 | 465,824 | 148 | 262,148 | (3) | (203,676) |
| Adjustments for | | | | | | | | | | | |
| Recoveries | | | (21,193) | | 0 | | 0 | | 0 | | 0 |
| Refunds | | | 0 | | 0 | | 0 | | 0 | | 0 |
| Unobligated balance, start of year | | | (63,389) | | (193,974) | | 0 | | 0 | | 0 |
| Unobligated balance, end of year | | | 193,974 | | 0 | | 0 | | 0 | | 0 |
| Financing from transfers: | | | | | | | | | | | |
| Transfers to other accounts (+) | | | 0 | | 0 | | 0 | | 0 | | 0 |
| Budget Authority/Appropriation | | | 205,563 | | 462,285 | | 465,824 | | 262,148 | | (203,676) |

**Department of Commerce**
**National Institute of Standards and Technology**
**Construction of Research Facilities**
**PROGRAM AND PERFORMANCE: REIMBURSABLE OBLIGATIONS**
(Dollar amounts in thousands)

| Comparison by activity/subactivity | | 2022 Actuals | | 2023 Enacted | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Construction and Major Renovations | | | | | | | | | | | |
| Safety, Capacity, Maintenance and | Pos/Approp | 0 | $0 | 0 | $0 | 0 | $0 | 0 | $0 | 0 | $0 |
| Major Repairs | FTE/Obl. | 0 | 1,033 | 0 | 932 | 0 | 0 | 0 | 0 | 0 | 0 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Construction of Research Facilities**
**SUMMARY OF FINANCING**
(Dollar amounts in thousands)

| | 2022 Actuals | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|
| Total Obligations | $97,204 | $657,191 | $465,824 | $262,148 | ($203,676) |
| Offsetting collections from: | | | | | |
| Non-Federal sources | (932) | 0 | 0 | 0 | 0 |
| Total offsetting collections | (932) | 0 | 0 | 0 | 0 |
| Recoveries (Direct) | (21,193) | 0 | 0 | 0 | 0 |
| Prior year recoveries (Reimbursable) | 0 | 0 | 0 | 0 | 0 |
| Refunds (Direct) | 0 | 0 | 0 | 0 | 0 |
| Unobligated balance, start of year (Direct) | (63,389) | (193,974) | 0 | 0 | 0 |
| Unobligated balance, start of year (Reimbursable) | (1,033) | (932) | 0 | 0 | 0 |
| Unobligated balance, end of year (Direct) | 193,974 | 0 | 0 | 0 | 0 |
| Unobligated balance, end of year (Reimbursable) | 932 | 0 | 0 | 0 | 0 |
| Budget Authority/Appropriation | 205,563 | 462,285 | 465,824 | 262,148 | (203,676) |

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**Department of Commerce**
**National Institute of Standards and Technology**
**Construction of Research Facilities**
**ADJUSTMENTS TO BASE**
(Dollar amounts in thousands)

| | Perm. Pos. | FTE | Amount |
|---|---|---|---|
| **Transfer** | ... | ... | 0 |
| **Adjustment** | ... | ... | 0 |
| **Financing** | ... | ... | 0 |
| **Other Changes:** | | | |
| FY 2023 pay raise | ... | ... | $171 |
| FY 2024 pay raise | ... | ... | 874 |
| Change in compensable days | ... | ... | 80 |
| Annualization of positions financed in FY 2023 | 0 | 0 | |
| Awards | ... | ... | 127 |
| Personnel benefits: | | | |
| Civil Service Retirement System (CSRS) | ... | ... | (1) |
| Federal Employees' Retirement System (FERS) | ... | ... | (25) |
| Thrift Savings Plan (TSP) | ... | ... | (2) |
| Federal Insurance Contribution Act (FICA) - OASDI | ... | ... | (15) |
| Health insurance | ... | ... | 36 |
| Employees' Compensation Fund | ... | ... | 0 |
| Travel and transportation of persons: | | | |
| Mileage | ... | ... | 0 |
| Per Diem | ... | ... | 1 |
| Rental Payments to GSA including FIT costs | ... | ... | 0 |
| Communications, utilities, and miscellaneous charges: | | | |
| HCHB Electricity | ... | ... | 0 |
| HCHB Water/Sewer | ... | ... | 0 |
| Electricity rate | ... | ... | 67 |
| Natural gas rate | ... | ... | 56 |
| Other services: | | | |
| Working Capital Fund Departmental Management | ... | ... | 0 |
| Cybersecurity (Non-Add in WCF) | | | [0] |
| NARA storage costs | ... | ... | 0 |
| General pricing level adjustment | ... | ... | 2,170 |
| Subtotal, Other Changes | 0 | 0 | 3,539 |
| Total, Adjustments to base | 0 | 0 | 3,539 |

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**Department of Commerce**
**National Institute of Standards and Technology**
**Construction of Research Facilities**
**PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS**
(Dollar amounts in thousands)

Activity: Construction and Major Renovations

| Line Item | | 2022 Actuals | | 2023 Enacted | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Construction and Major Renovations | Pos/Approp | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | FTE/Obl. | 10 | $8,304 | 0 | 39,587 | 0 | 0 | 0 | 0 | 0 | 0 |
| Safety, Capacity, Maintenance and Major Repairs | Pos/Approp | 138 | 80,000 | 149 | $130,000 | 152 | $133,539 | 152 | $262,148 | 0 | $128,609 |
| | FTE/Obl. | 135 | 87,854 | 145 | 158,837 | 148 | 133,539 | 148 | 262,148 | 0 | 128,609 |
| External Projects | Pos/Approp | 3 | 125,563 | 7 | 332,285 | 4 | 332,285 | 0 | 0 | (4) | (332,285) |
| | FTE/Obl. | 0 | 13 | 6 | 457,835 | 3 | 332,285 | 0 | 0 | (3) | (332,285) |
| **Total** | Pos/Approp | 152 | 205,563 | 156 | 462,285 | 156 | 465,824 | 152 | 262,148 | (4) | (203,676) |
| | FTE/Obl. | 145 | 96,171 | 151 | 656,259 | 151 | 465,824 | 148 | 262,148 | (3) | (203,676) |

**Department of Commerce**
**National Institute of Standards and Technology**
**Construction of Research Facilities**
**PROGRAM AND PERFORMANCE: REIMBURSABLE OBLIGATIONS**
(Dollar amounts in thousands)

Activity: Construction and Major Renovations

| Comparison by activity/subactivity | | 2022 Actuals | | 2023 Enacted | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Construction and Major Renovations | Pos/Approp | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | FTE/Obl. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Safety, Capacity, Maintenance and Major Repairs | Pos/Approp | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | FTE/Obl. | 0 | $1,033 | 0 | $ 932 | 0 | 0 | 0 | 0 | 0 | 0 |
| External Projects | Pos/Approp | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | FTE/Obl. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | Pos/Approp | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | FTE/Obl. | 0 | 1,033 | 0 | 932 | 0 | 0 | 0 | 0 | 0 | 0 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Construction of Research Facilities**
**JUSTIFICATION OF PROGRAM AND PERFORMANCE**
(Dollar amounts in thousands)

## Goal Statement

The goal of Construction of Research Facilities (CRF) funding is to provide the facilities and infrastructure that enable scientists and researchers to fulfill NIST's mission – "To promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve our quality of life."

## Base Program

The CRF appropriation funds construction activities, including maintenance, repairs, improvements, and major renovations of facilities occupied or used by NIST in Gaithersburg, Maryland; Boulder and Fort Collins, Colorado; and Kauai, Hawaii with the intent to meet current and future advancements in measurement science, standards, and technology to promote innovation and industrial competitiveness for the Nation. The CRF appropriation is made up of 2 subcomponents; Construction and Major Renovations (CMR) and Safety, Capacity, Maintenance and Major Repairs (SCMMR).

In the 1950s and 1960s, the U.S. government recognized the need to invest in science and technology and built state-of-the-art scientific facilities to support the research mission of NIST (then the National Bureau of Standards), breaking ground at NBS's Boulder site in 1951 and at the NBS's new main site in Gaithersburg in 1961. Well over half a century later, both sites' aging and deteriorating buildings and infrastructure threaten NIST's ability to fulfill its mission. NIST's Visiting Committee on Advanced Technologies has been noting increasing impacts to NIST's mission due to facility conditions evolving their annual comments to Congress as "alarming" and "critical" in 2002 to "crumbling" facilities that prevent NIST from conducting current state-of-the art science[2] Further, "NIST's poor and worsening facility situation will continue to prevent its world-class scientists from realizing NIST's full potential, to the detriment of the nation's security and economic competitiveness." Additionally, even if buildings were operating as if new in the 1950s and 1960s, they would not have the environmental controls or utility capacities necessary for cutting edge 21st century research. While the construction of new facilities and major renovation of existing facilities in recent years have made some improvements in the overall facility conditions at each site, the current overall state of facilities and infrastructure continues to be a serious impediment to NIST's ability to conduct advanced measurement science and research. This is primarily due to the unique funding requirements of major construction projects, which often require full contractual funding prior to award, and the prerequisite of sustained funding levels for annual operations and maintenance.

[2]National Academies of Sciences, Engineering, and Medicine. 2023. Technical Assessment of the Capital Facility Needs of the National Institute of Standards and Technology. Washington, D.C., National Academies Press

Examples of critical facility and infrastructure investments to support the needs of these modern research institutions include:

- Replacement of aging underground site utility distribution systems that are failing at an accelerated frequency resulting in loss of utilities to buildings, undermining of roads and parking lots and contamination of waterways leading to environmental noncompliance reports;
- Replacement of aging, obsolete, and failed mechanical systems, which includes heating and cooling coils, chillers, condenser units, exhaust fans, condensate receivers, vacuum pumps, and steam traps that are well beyond their useful life leading to a lack of temperature controls and flooding of research and administrative spaces;
- Replacement of the failing 1950s and 1960s pneumatic heating, ventilation, and air conditioning control systems with current-day direct digital systems to address the buildings' supply/return/exhaust air rebalancing issues that impact researcher capabilities for performing research;
- Replacement of aging and failing electrical distribution systems to provide safe working conditions and to accommodate current and expanding research capacity requirements and prevent power quality issues negatively impacting calibrations services for national defense and security customers;
- Providing back-up power capabilities for mission resiliency;
- Replacement of motor control centers, transformers, switchgear, network protectors, buss ducts, panels, UPS systems, fire alarm systems, and variable frequency drives no longer supported by manufacturers and for which parts are no longer available;
- Replacement of the obsolete 30-year old IT network infrastructure that can no longer support the capacity and speed required by facility and scientific systems;
- Replacement of the aging mechanical and electrical systems that can no longer support the load requirement of IT systems;
- Address degradations to the buildings' envelope exteriors and interior architectural systems – energy inefficient and/or leaking windows and doors, uninsulated rollup doors that do not seal, below grade water infiltration through foundation cracks, worn out ceilings and flooring, and lack of insulation in exterior walls;
- Replacement of roofs;
- Refurbishment of elevators;
- Updating buildings and exterior pathways to be Americans with Disabilities Act compliant;
- Abatement of asbestos; and
- Repair of deteriorating road, parking lot, and sidewalk surfaces.

## Statement of Operating Objectives

The base request of $133.5 million for Safety, Capacity, Maintenance and Major Repairs ) (SCMMR) would allow for addressing NIST's most pressing utility infrastructure, safety and structural deficiencies. Components of this would include:

- $12 million for replacement of the major electrical gear in 1 laboratory building in Gaithersburg,
- $12 million for replacement of antiquated overhead cranes due to safety concerns of catastrophic failure,
- $4 million in IT infrastructure upgrades,
- Initiating a design for the complete replacement of the Gaithersburg underground utility infrastructure system with a potential cost of $500 million - $700 million for initial seed project award in FY 2025,
- Addressing utility infrastructure deficiencies impacting research buildings for semiconductor chip research,

- Initiating ADA and safety related projects,
- Potential decommissioning of 1-2 40+ year old “temporary” buildings,
- And additional projects as funding allows to address NIST’s nearly $900 million FY 2022 deferred maintenance backlog.

Projects NIST plans to accomplish with FY 2023 funding include:

- Correction of 80-90 percent or greater of the deferred maintenance backlog in Building 235 while taking advantage of a once in a decade year-long shutdown of the research nuclear reactor;
- Capacity improvements, life safety corrective measures, and major component replacements at both campuses’ Central Utility Plants;
- Replacement of the underground sewer and domestic water systems in Boulder, CO;
- Upgrades to the chilled water distribution system in Boulder, CO;
- Correction of all deferred maintenance to the research building in Kauai, HI;
- Fire alarm panel replacements in Gaithersburg, MD;
- Replacement of electrical switchgear in two buildings in Gaithersburg, MD;
- Begin a multi-year replacement project for heating, ventilating, and air conditioning systems in Gaithersburg, MD;
- $3 million or more for IT infrastructure upgrades to include upgraded fiber and system hardware to increase transmission speeds and provide capacity upgrades;
- Address a deteriorating steam distribution system on the south side of the Gaithersburg, MD campus;
- Begin a multi-year rehabilitation program for roads and parking lots in Gaithersburg, MD; and
- Americans with Disabilities Act compliance projects at both campuses.

Recent and ongoing examples of work being implemented with base funds include:

- Over 50 percent of SCMMR funding is invested in utility infrastructure with 57 projects in procurement;
- Designs in progress for correction of a majority of deferred maintenance in Building 235, our reactor building, 14 roof replacements, and paving rehabilitation program;
- Replacement of failing heating, ventilating and air conditioning systems in three buildings;
- Upgrades to Building 101, the main headquarters building, a structure that hasn’t seen major renovation since being one of the first built on campus in the early 1960s;
- Replacement of major electrical equipment in six buildings and designs in progress for replacements in three others;
- Over $10 million in investments in upgrading and replacement of IT infrastructure equipment and distribution wiring; and
- Beginning of Americans with Disabilities Act upgrade projects at both campuses.

## Explanation and Justification

| Line Item | | 2022 Actuals | | 2023 Enacted | | 2024 Base | |
|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Construction and Major Renovations | Pos/Approp | 11 | 0 | 0 | 0 | 0 | 0 |
| | FTE/Obl. | 10 | $8,304 | 0 | 39,587 | 0 | 0 |
| Safety, Capacity, Maintenance and Major Repairs | Pos/Approp | 138 | 80,000 | 149 | $130,000 | 152 | $133,539 |
| | FTE/Obl. | 135 | 87,854 | 145 | 158,837 | 148 | 133,539 |
| External Projects | Pos/Approp | 3 | 125,563 | 7 | 332,285 | 4 | 332,285 |
| | FTE/Obl. | 0 | 13 | 6 | 457,835 | 3 | 332,285 |
| **Total** | Pos/Approp | 152 | 205,563 | 156 | 462,285 | 156 | 465,824 |
| | FTE/Obl. | 145 | 96,171 | 151 | 656,259 | 151 | 465,824 |

With SCMMR base funding, NIST will fund annual labor, operations and maintenance expenses as well as prioritize its efforts to maintain, repair, improve and upgrade its facilities to address its highest priority SCMMR projects. If major facilities-related emergency situations arise, previously planned facilities work will be reprioritized as appropriate.

**Department of Commerce**
**National Institute of Standards and Technology**
**Construction of Research Facilities**
**PROGRAM CHANGES FOR 2024**
(Dollar amounts in thousands)

| | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Safety, Capacity, Maintenance and Major Repairs | Pos/BA | 152 | $133,539 | 0 | $183,539 | 0 | $50,000 |
| | FTE/Obl. | 148 | 133,539 | 0 | $183,539 | 0 | $50,000 |

**Gaithersburg Central Utility Plant Modernization (+$50,000, 0 FTE/0 Positions)** – The Central Utility Plant (CUP) on the Gaithersburg, Maryland campus is one of 26 original buildings on the campus that is roughly 60 years old. While there have been some expansions for capacity and campus sustainability (co-generation plant) and some equipment replacements, the CUP has never had a full-scale modernization effort. This project would provide for the full modernization of the CUP to replace all existing infrastructure and older equipment with new state of the art sustainable systems. The CUP Modernization project would also provide for capacity increases in line with the 2018 campus master plan to accommodate future load requirements from new or expanded buildings on the campus for steam, chilled water or compressed air. The CUP Modernization project would also provide for a command-and-control center to monitor all utility system data on the campus as the sole 24/7 manned center for facilities management with this capability. This would enable quicker and more accurate data to first responders in the event of a utility infrastructure failure on campus and tie in several systems that currently are not centrally managed.

A modernized CUP will provide a more sustainable and reliable facility that has redundancies built in to reduce the down time for maintenance (reducing negative impacts to the NIST research mission) as well as reduce costs to NIST. By reducing costs at both the utility level and at the maintenance level, there are two programs that will benefit from lower operating expenses and allow more funding towards other urgent needs and thus increasing capabilities in the SCMMR program (maintenance) and NIST overhead accounts.

A modernized CUP will provide additional capacity for steam, chilled water and compressed air in line with the 2018 campus master plan. This will enable the expansion of mission requirements in both existing buildings as well as construction of new buildings to meet NIST mission needs. Without the additional capacity from a modernized CUP, the additional requirements of new or renovated facilities will be negatively impacted. Some new expansion capabilities could be achieved, but the majority of the additional requirements in the master plan require capacity improvements in the CUP as well as the underground utility infrastructure. The CUP modernization comes first, followed by replacement of the entire campus underground utility infrastructure with redundancies and increased capacities built in to be in line with the campus master plan.

**Department of Commerce**
**National Institute of Standards and Technology**
**Construction of Research Facilities**
**SUMMARY OF REQUIREMENTS BY OBJECT CLASS**
(Dollar amounts in thousands)

| | Object Class | 2022 Actuals | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/(Decrease) from 2024 Base |
|---|---|---|---|---|---|---|
| 11 | Personnel compensation | | | | | |
| 11.1 | Full-time permanent | $15,586 | $16,813 | $17,147 | 17,147 | $0 |
| 11.3 | Other than full-time permanent | 0 | 0 | 0 | 0 | 0 |
| 11.5 | Other personnel compensation | 674 | 693 | 832 | 832 | 0 |
| 11.9 | **Total personnel compensation** | 16,260 | 17,506 | 17,979 | 17,979 | 0 |
| 12.1 | Civilian personnel benefits | 5,850 | 6,233 | 6,354 | 6,354 | 0 |
| 13 | Benefits for former personnel | 0 | 0 | 0 | 0 | 0 |
| 21 | Travel and transportation of persons | 75 | 167 | 168 | 196 | 28 |
| 22 | Transportation of things | 24 | 51 | 52 | 54 | 2 |
| 23.1 | Rental payments to GSA | 3 | 3 | 3 | 3 | 0 |
| 23.2 | Rental payments to others | 0 | 0 | 0 | 0 | 0 |
| 23.3 | Communications, utilities, and miscellaneous charges | 405 | 1,352 | 1,481 | 2,484 | 1,003 |
| 24 | Printing and reproduction | 21 | 35 | 36 | 41 | 5 |
| 25.1 | Advisory and assistance services | 12 | 134 | 137 | 137 | 0 |
| 25.2 | Other services from non-Federal sources | 65,993 | 128,236 | 102,051 | 102,749 | 698 |
| 25.3 | Other goods and services from Federal sources | 1,183 | 1,773 | 1,797 | 1,976 | 179 |
| 25.5 | Research and development contracts | 0 | 0 | 0 | 0 | 0 |
| 25.7 | Operation and maintenance of equipment | 3,376 | 3,637 | 3,710 | 3,805 | 95 |
| 26 | Supplies and materials | 2,498 | 2,613 | 2,665 | 2,752 | 87 |
| 31 | Equipment | 360 | 420 | 429 | 485 | 56 |
| 32 | Land and structures | 111 | 38,713 | 0 | 47,847 | 47,847 |
| 41 | Grants, subsidies, and contributions | 0 | 455,386 | 328,962 | 328,962 | 0 |
| 42 | Insurance claims and indemnities | 0 | 0 | 0 | 0 | 0 |
| 43 | Interest and dividends | 0 | 0 | 0 | 0 | 0 |
| 99 | Total Obligations | 96,171 | 656,259 | 465,824 | 515,824 | 50,000 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Construction of Research Facilities**
**PROGRAM CHANGES FOR 2024**
(Dollar amounts in thousands)

| | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Safety, Capacity, Maintenance and Major Repairs | Pos/BA | 152 | $133,539 | 0 | $182,148 | 0 | $48,609 |
| | FTE/Obl. | 148 | 133,539 | 0 | $182,148 | 0 | $48,609 |

**Repair and Revitalization of NIST Facilities ($48,609 0 FTE/0 Positions)** - NIST requests $48.6 million to repair and revitalize NIST facilities and to address the maintenance backlog (steam, electrical, chilled water, etc.) and to modernize its IT networking infrastructure to deliver the speed, reliability, and capacity needed to meet the large data and computing demands of high-technology research facilities. This funding would support infrastructure improvements and enhancement of research space across the Gaithersburg, MD and Boulder, CO campuses ensuring that NIST is able to support a leading-edge research and development program that advances U.S. innovation in fields of quantum information science, artificial intelligence, advanced manufacturing, cybersecurity, privacy, and 5G telecommunications.

**Department of Commerce**
**National Institute of Standards and Technology**
**Construction of Research Facilities**
**SUMMARY OF REQUIREMENTS BY OBJECT CLASS**
(Dollar amounts in thousands)

| | Object Class | 2022 Actuals | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/(Decrease) from 2024 Base |
|---|---|---|---|---|---|---|
| 11 | Personnel compensation | | | | | |
| 11.1 | Full-time permanent | $15,586 | $16,813 | $17,147 | 17,147 | $0 |
| 11.3 | Other than full-time permanent | 0 | 0 | 0 | 0 | 0 |
| 11.5 | Other personnel compensation | 674 | 693 | 832 | 832 | 0 |
| 11.9 | **Total personnel compensation** | 16,260 | 17,506 | 17,979 | 17,979 | 0 |
| 12.1 | Civilian personnel benefits | 5,850 | 6,233 | 6,354 | 6,354 | 0 |
| 13 | Benefits for former personnel | 0 | 0 | 0 | 0 | 0 |
| 21 | Travel and transportation of persons | 75 | 167 | 168 | 195 | 27 |
| 22 | Transportation of things | 24 | 51 | 52 | 54 | 2 |
| 23.1 | Rental payments to GSA | 3 | 3 | 3 | 3 | 0 |
| 23.2 | Rental payments to others | 0 | 0 | 0 | 0 | 0 |
| 23.3 | Communications, utilities, and miscellaneous charges | 405 | 1,352 | 1,481 | 2,456 | 975 |
| 24 | Printing and reproduction | 21 | 35 | 36 | 41 | 5 |
| 25.1 | Advisory and assistance services | 12 | 134 | 137 | 137 | 0 |
| 25.2 | Other services from non-Federal sources | 65,993 | 128,236 | 102,051 | 149,244 | 47,193 |
| 25.3 | Other goods and services from Federal sources | 1,183 | 1,773 | 1,797 | 1,972 | 175 |
| 25.5 | Research and development contracts | 0 | 0 | 0 | 0 | 0 |
| 25.7 | Operation and maintenance of equipment | 3,376 | 3,637 | 3,710 | 3,802 | 92 |
| 26 | Supplies and materials | 2,498 | 2,613 | 2,665 | 2,750 | 85 |
| 31 | Equipment | 360 | 420 | 429 | 484 | 55 |
| 32 | Land and structures | 111 | 38,713 | 0 | 0 | 0 |
| 41 | Grants, subsidies, and contributions | 0 | 455,386 | 328,962 | 328,962 | 0 |
| 42 | Insurance claims and indemnities | 0 | 0 | 0 | 0 | 0 |
| 43 | Interest and dividends | 0 | 0 | 0 | 0 | 0 |
| 99 | Total Obligations | 96,171 | 656,259 | 465,824 | 514,433 | 48,609 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Construction of Research Facilities**
**PROGRAM CHANGES FOR 2024**
(Dollar amounts in thousands)

| | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Safety, Capacity, Maintenance and Major Repairs | Pos/BA | 152 | $133,539 | 0 | $163,539 | 0 | $30,000 |
| | FTE/Obl. | 148 | 133,539 | 0 | $163,539 | 0 | $30,000 |

**Multiple HVAC System Replacements (+$30,000, 0 FTE/0 Positions)** - The air handling units (AHUs) and related heating, ventilation, and air conditioning (HVAC) distribution systems in most buildings across the Gaithersburg, Maryland campus are original and lack the capacity to provide clean, temperature-controlled air at proper ventilation rates to building occupants. This project is for three efforts: (1) replacement of the AHUs and control systems in NIST's headquarters building 101, (2) AHUs and control systems in building 304, and (3) an entire HVAC system replacement (of original components) in building 301. During the COVID-19 pandemic, many of NIST's buildings were unable to provide proper ventilation to align with CDC guidelines and industry best practices for ventilation systems due to filtration capabilities or ventilation rates. These efforts would address those shortcomings and provide higher indoor air quality (IAQ) for occupants in each of these buildings. As part of the HVAC system replacement in Building 301, NIST will also be converting unrenovated spaces to hybrid office spaces to increase capacity and consolidate NIST safety, acquisitions, and grants programs into one building. In addition to current tenants and as part of major campus planning efforts and realignment of the overall housing plan on the campus, we are looking to free up space in other buildings as well.

The HVAC control systems for these buildings would be updated from compressed air controlled pneumatic systems to modern digital systems that could tie in with the campus direct digital controls network for our HVAC systems. This would provide significant improvements in control and monitoring of the systems that would result in more sustainable operations of the HVAC systems. Additional life-safety capabilities for carbon dioxide monitoring will also be tied into the new systems.

Building 301 will be undergoing hybrid office conversions as a part of this project that will enable higher occupancies in this building as part of a larger program to remove non-research entities from research buildings. This allows for additional space for internal research building swing spaces needed as part of projects in the construction and major renovations (CMR) budget program. Two of the three building projects play a supporting role in a larger program while simultaneously addressing IAQ concerns in the existing buildings. Therefore, this effort results in an increased program capacity for each of these buildings in occupancy.

**Department of Commerce**
**National Institute of Standards and Technology**
**Construction of Research Facilities**
**SUMMARY OF REQUIREMENTS BY OBJECT CLASS**
(Dollar amounts in thousands)

| | Object Class | 2022 Actuals | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/(Decrease) from 2024 Base |
|---|---|---|---|---|---|---|
| 11 | Personnel compensation | | | | | |
| 11.1 | Full-time permanent | $15,586 | $16,813 | $17,147 | 17,147 | $0 |
| 11.3 | Other than full-time permanent | 0 | 0 | 0 | 0 | 0 |
| 11.5 | Other personnel compensation | 674 | 693 | 832 | 832 | 0 |
| 11.9 | **Total personnel compensation** | 16,260 | 17,506 | 17,979 | 17,979 | 0 |
| 12.1 | Civilian personnel benefits | 5,850 | 6,233 | 6,354 | 6,354 | 0 |
| 13 | Benefits for former personnel | 0 | 0 | 0 | 0 | 0 |
| 21 | Travel and transportation of persons | 75 | 167 | 168 | 185 | 17 |
| 22 | Transportation of things | 24 | 51 | 52 | 53 | 1 |
| 23.1 | Rental payments to GSA | 3 | 3 | 3 | 3 | 0 |
| 23.2 | Rental payments to others | 0 | 0 | 0 | 0 | 0 |
| 23.3 | Communications, utilities, and miscellaneous charges | 405 | 1,352 | 1,481 | 2,083 | 602 |
| 24 | Printing and reproduction | 21 | 35 | 36 | 39 | 3 |
| 25.1 | Advisory and assistance services | 12 | 134 | 137 | 137 | 0 |
| 25.2 | Other services from non-Federal sources | 65,993 | 128,236 | 102,051 | 131,178 | 29,127 |
| 25.3 | Other goods and services from Federal sources | 1,183 | 1,773 | 1,797 | 1,904 | 107 |
| 25.5 | Research and development contracts | 0 | 0 | 0 | 0 | 0 |
| 25.7 | Operation and maintenance of equipment | 3,376 | 3,637 | 3,710 | 3,767 | 57 |
| 26 | Supplies and materials | 2,498 | 2,613 | 2,665 | 2,717 | 52 |
| 31 | Equipment | 360 | 420 | 429 | 463 | 34 |
| 32 | Land and structures | 111 | 38,713 | 0 | 0 | 0 |
| 41 | Grants, subsidies, and contributions | 0 | 455,386 | 328,962 | 328,962 | 0 |
| 42 | Insurance claims and indemnities | 0 | 0 | 0 | 0 | 0 |
| 43 | Interest and dividends | 0 | 0 | 0 | 0 | 0 |
| 99 | Total Obligations | 96,171 | 656,259 | 465,824 | 495,824 | 30,000 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Construction of Research Facilities**
**PROGRAM CHANGES FOR 2024**
(Dollar amounts in thousands)

| | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Removal of One-time | Pos/BA | 4 | $332,285 | 0 | 0 | 0 | ($332,285) |
| Congressional External | FTE/Obl. | 3 | $332,285 | 0 | 0 | 0 | ($332,285) |
| Community Projects | | | | | | | |

**Removal of One-time Congressional External Community Projects (-$332,285, -3 FTE/-4 Position) -** This program change removes funding for one-time congressionally directed projects provided in the FY 2023 enacted bill.

**Department of Commerce**
**National Institute of Standards and Technology**
**Construction of Research Facilities**
**PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Construction and major renovations
Subactivity: Construction and major renovations
Program Change: Congressional External Community Projects

| Full-time permanent | | | | | |
|---|---|---|---|---|---|
| Title | | Grade | Number | Annual Salary | Total Salaries |
| Contract Specialist | | ZP III | (2) | ($89,834) | ($179,668) |
| Construction Grants Specialist | | ZP IV | (2) | (126,233) | (252,466) |
| Total | | | (4) | | (432,134) |
| Less lapse | 25.00% | | (1) | | (108,034) |
| Total full-time permanent (FTE) | | | (3) | | (324,100) |
| 2024 pay Adjustment (5.2%) | | | | | (15,571) |
| | | | | | (339,671) |
| | | | | | |
| **Personnel Data Summary** | | | | | |
| Full-time Equivalent Employment (FTE) | | | | | |
| Full-time permanent | | | (3) | | |
| Part-time permanent | | | 0 | | |
| Full-time temporary | | | 0 | | |
| Part-time temporary | | | 0 | | |
| Total FTE | | | (3) | | |
| | | | | | |
| Authorized Positions | | | | | |
| Full-time permanent | | | (4) | | |
| Part-time permanent | | | 0 | | |
| Full-time temporary | | | 0 | | |
| Part-time temporary | | | 0 | | |
| Total Positions | | | (4) | | |

**Department of Commerce**
**National Institute of Standards and Technology**
**Construction of Research Facilities**
**SUMMARY OF REQUIREMENTS BY OBJECT CLASS**
(Dollar amounts in thousands)

| | Object Class | 2022 Actuals | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/(Decrease) from 2024 Base |
|---|---|---|---|---|---|---|
| 11 | Personnel compensation | | | | | |
| 11.1 | Full-time permanent | $15,586 | $16,813 | $17,147 | 16,807 | ($340) |
| 11.3 | Other than full-time permanent | 0 | 0 | 0 | 0 | 0 |
| 11.5 | Other personnel compensation | 674 | 693 | 832 | 832 | 0 |
| 11.9 | **Total personnel compensation** | 16,260 | 17,506 | 17,979 | 17,639 | (340) |
| 12.1 | Civilian personnel benefits | 5,850 | 6,233 | 6,354 | 6,242 | (112) |
| 13 | Benefits for former personnel | 0 | 0 | 0 | 0 | 0 |
| 21 | Travel and transportation of persons | 75 | 167 | 168 | 68 | (100) |
| 22 | Transportation of things | 24 | 51 | 52 | 27 | (25) |
| 23.1 | Rental payments to GSA | 3 | 3 | 3 | 3 | 0 |
| 23.2 | Rental payments to others | 0 | 0 | 0 | 0 | 0 |
| 23.3 | Communications, utilities, and miscellaneous charges | 405 | 1,352 | 1,481 | 1,481 | 0 |
| 24 | Printing and reproduction | 21 | 35 | 36 | 24 | (12) |
| 25.1 | Advisory and assistance services | 12 | 134 | 137 | 137 | 0 |
| 25.2 | Other services from non-Federal sources | 65,993 | 128,236 | 102,051 | 99,737 | (2,314) |
| 25.3 | Other goods and services from Federal sources | 1,183 | 1,773 | 1,797 | 1,422 | (375) |
| 25.5 | Research and development contracts | 0 | 0 | 0 | 0 | 0 |
| 25.7 | Operation and maintenance of equipment | 3,376 | 3,637 | 3,710 | 3,685 | (25) |
| 26 | Supplies and materials | 2,498 | 2,613 | 2,665 | 2,645 | (20) |
| 31 | Equipment | 360 | 420 | 429 | 429 | 0 |
| 32 | Land and structures | 111 | 38,713 | 0 | 0 | 0 |
| 41 | Grants, subsidies, and contributions | 0 | 455,386 | 328,962 | 0 | (328,962) |
| 42 | Insurance claims and indemnities | 0 | 0 | 0 | 0 | 0 |
| 43 | Interest and dividends | 0 | 0 | 0 | 0 | 0 |
| 99 | Total Obligations | 96,171 | 656,259 | 465,824 | 133,539 | (332,285) |

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**Department of Commerce**
**National Institute of Standards and Technology**
**Construction of Research Facilities**
**SUMMARY OF REQUIREMENTS BY OBJECT CLASS**
(Dollar amounts in thousands)

| | Object Class | 2022 Actuals | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/(Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 11 | Personnel compensation | | | | | |
| 11.1 | Full-time permanent | $15,586 | $16,813 | $17,147 | $16,807 | (340) |
| 11.3 | Other than full-time permanent | 0 | 0 | 0 | 0 | 0 |
| 11.5 | Other personnel compensation | 674 | 693 | 832 | 832 | 0 |
| 11.9 | **Total personnel compensation** | 16,260 | 17,506 | 17,979 | 17,639 | (340) |
| 12.1 | Civilian personnel benefits | 5,850 | 6,233 | 6,354 | 6,242 | (112) |
| 13 | Benefits for former personnel | 0 | 0 | 0 | 0 | 0 |
| 21 | Travel and transportation of persons | 75 | 167 | 168 | 139 | (29) |
| 22 | Transportation of things | 24 | 51 | 52 | 32 | (20) |
| 23.1 | Rental payments to GSA | 3 | 3 | 3 | 3 | 0 |
| 23.2 | Rental payments to others | 0 | 0 | 0 | 0 | 0 |
| 23.3 | Communications, utilities, and miscellaneous charges | 405 | 1,352 | 1,481 | 4,062 | 2,581 |
| 24 | Printing and reproduction | 21 | 35 | 36 | 37 | 1 |
| 25.1 | Advisory and assistance services | 12 | 406 | 8 | 8 | 0 |
| 25.2 | Other services from non-Federal sources | 65,993 | 127,964 | 102,180 | 176,884 | $74,704 |
| 25.3 | Other goods and services from Federal sources | 1,183 | 1,773 | 1,797 | 1,883 | 86 |
| 25.5 | Research and development contracts | 0 | 0 | 0 | 0 | 0 |
| 25.7 | Operation and maintenance of equipment | 3,376 | 3,637 | 3,710 | 3,929 | 219 |
| 26 | Supplies and materials | 2,498 | 2,613 | 2,665 | 2,869 | 204 |
| 31 | Equipment | 360 | 420 | 429 | 574 | 145 |
| 32 | Land and structures | 111 | 38,713 | 0 | 47,847 | 47,847 |
| 41 | Grants, subsidies, and contributions | 0 | 455,386 | 328,962 | 0 | (328,962) |
| 42 | Insurance claims and indemnities | 0 | 0 | 0 | 0 | 0 |
| 43 | Interest and dividends | 0 | 0 | 0 | 0 | 0 |
| 99 | Total Obligations | 96,171 | 656,259 | 465,824 | 262,148 | (203,676) |

| | Object Class | 2022 Actuals | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/(Decrease) from 2024 Base |
|---|---|---|---|---|---|---|
| 99 | Total Obligations | $96,171 | $656,259 | $465,824 | $262,148 | ($203,676) |
| | Less prior year recoveries | (21,193) | 0 | 0 | 0 | 0 |
| | Less prior year refunds | 0 | 0 | 0 | 0 | 0 |
| | Less prior year unobligated balance | (63,389) | (193,974) | 0 | 0 | 0 |
| | Plus unobligated balance end of year | 193,974 | 0 | 0 | 0 | 0 |
| | Total Budget Authority/Appropriation | 205,563 | 462,285 | 465,824 | 262,148 | (203,676) |
| | Plus Transfers from Other Accounts | 0 | 0 | 0 | 0 | 0 |
| | Appropriation | 205,563 | 462,285 | 465,824 | 262,148 | (203,676) |

Personnel Data

| | | | | | |
|---|---|---|---|---|---|
| Full-time equivalent employment: | | | | | |
| Full-time permanent | 145 | 151 | 151 | 148 | (3) |
| Other than full-time permanent | 0 | 0 | 0 | 0 | 0 |
| Total | 145 | 151 | 151 | 148 | (3) |
| Authorized Positions: | | | | | |
| Full-time permanent | 152 | 156 | 156 | 152 | (4) |
| Other than full-time permanent | 0 | 0 | 0 | 0 | 0 |
| Total | 152 | 156 | 156 | 152 | (4) |

**Department of Commerce**
**National Institute of Standards and Technology**
**Construction of Research Facilities**
**APPROPRIATION LANGUAGE AND CODE CITATIONS**

1. For construction of new research facilities, including architectural and engineering design, and for renovation and maintenance of existing facilities, not otherwise provided for the National Institute of Standards and Technology, as authorized by 15 U.S.C. 278c-278e.

   15 U.S.C. 278c authorizes that the Secretary of Commerce to acquire land for such field sites as are necessary for the proper and efficient conduct of the activities authorized.

   15 U.S.C. 278d authorizes that the Secretary of Commerce to undertake such construction of buildings and other facilities and to make such improvements to existing buildings, grounds, and other facilities as are necessary for the proper and efficient conduct of authorized activities.

   15 U.S.C. 278e provides that in the performance of the functions of the National Institute of Standards and Technology the Secretary of Commerce is authorized to undertake: the care, maintenance, protection, repair, and alteration of Institute buildings and other plant facilities, equipment, and property.

2. $262,148,000 to remain available until expended, no specific authority.

3. Public Law 110-69, America Competes Act, 121 Stat 572, passed August 9, 2007, reauthorizes the Construction of Research Facilities appropriation through 2010. It also provided for the Retention of Fees to the Construction of Research Facilities account. “The Director is authorized to retain all building use and depreciation surcharge fees collected pursuant to OMB Circular A-25. Such fees shall be collected and credited to the Construction of Research Facilities Appropriation Account for use in maintenance and repair of the Institute's existing facilities”. Public Law 111-358, America Competes Reauthorization Act, 2010, 124 Stat 3982, passed January 4, 2011, reauthorized the Construction of Research Facilities appropriation through 2013.

**Department of Commerce**
**National Institute of Standards and Technology**
**Construction of Research Facilities**
**ADVISORY AND ASSISTANCE SERVICES**
(Obligations in thousands of dollars)

| | FY 2022 Actual | FY 2023 Enacted | FY 2024 Estimate |
|---|---|---|---|
| Consulting Services | | | |
| Management and professional support services | $1 | $1 | 0 |
| Studies, analyses, and evaluations | 0 | 0 | 0 |
| Engineering and technical services | 11 | 405 | $8 |
| Total | 12 | 406 | 8 |

## Significant Activities

Advisory and assistance services funded by the Construction of Research Facilities appropriation includes assisting the development of program requirements for addition, replacement, and consolidation of existing facilities and structures, services for interior and exterior signage standards, and conceptual design for new facilities.

## Need for Advisory and Assistance Services

NIST uses outside professional support and engineering and technical services whenever necessary expertise is not available in-house to ensure the safety of NIST staff and visitors. These services provide for Construction of Research Facilities mainly relate to building construction architectural systems, facilities capital planning, and safety.

**Department of Commerce**
**National Institute of Standards and Technology**
**Working Capital Fund**
**SUMMARY OF RESOURCE REQUIREMENTS**
(Dollar amounts in thousands)

| | Positions | FTE | Budget Authority | Direct Obligations |
|---|---|---|---|---|
| Enacted, 2023 | 674 | 674 | 0 | 0 |
| Adjustment in transfers from prior STRS program changes | 0 | 0 | 0 | 0 |
| 2024 Base | 674 | 674 | 0 | 0 |
| Transfer from STRS program changes for equipment investments | 0 | 0 | 0 | 0 |
| 2024 Estimate | 674 | 674 | 0 | 0 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Working Capital Fund**
**SUMMARY OF REIMBURSABLE OBLIGATIONS**
(Dollar amounts in thousands)

| Comparison by activity/subactivity | 2022 Actual | | 2023 Enacted | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|---|---|---|
| | FTE | Amount | FTE | Amount | FTE | Amount | FTE | Amount | FTE | Amount |
| Laboratory Programs | | | | | | | | | | |
| WCF transfer | | 0 | | 0 | | 0 | | 0 | | 0 |
| Reimbursables | 524 | $153,885 | 629 | $146,785 | 629 | $144,082 | 629 | $144,082 | 0 | 0 |
| WCF investments | 0 | 15,648 | 0 | 21,064 | 0 | 0 | 0 | 0 | 0 | 0 |
| Subtotal | 524 | 169,533 | 629 | 167,849 | 629 | 144,082 | 629 | 144,082 | 0 | 0 |
| Corporate Services | | | | | | | | | | |
| WCF transfer | | 0 | | 0 | | 0 | | 0 | | 0 |
| Reimbursables | 12 | 4,176 | 15 | 5,681 | 15 | 4,708 | 15 | 4,708 | 0 | 0 |
| WCF investments | 0 | (50) [2/] | 0 | (4) [2/] | 0 | 0 | 0 | 0 | 0 | 0 |
| Subtotal | 12 | 4,126 | 15 | 5,677 | 15 | 4,708 | 15 | 4,708 | 0 | 0 |
| Standards Coordination and Special Programs [1/] | | | | | | | | | | |
| WCF transfer | | 0 | | 0 | | 0 | | 0 | | 0 |
| Reimbursables | 25 | 9,221 | 28 | 9,939 | 28 | 9,810 | 28 | 9,810 | 0 | 0 |
| WCF investments | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Subtotal | 25 | 9,221 | 28 | 9,939 | 28 | 9,810 | 28 | 9,810 | 0 | 0 |
| Hollings Manufacturing Extension Partnership | | | | | | | | | | |
| WCF transfer | | 0 | | 0 | | 0 | | 0 | | 0 |
| Reimbursables | 0 | 1,346 | 2 | 2,000 | 2 | 1,600 | 2 | 1,600 | 0 | 0 |
| WCF investments | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Subtotal | 0 | 1,346 | 2 | 2,000 | 2 | 1,600 | 2 | 1,600 | 0 | 0 |

| | 2022 Actual | | 2023 Enacted | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|---|---|---|
| | FTE | Amount | FTE | Amount | FTE | Amount | FTE | Amount | FTE | Amount |
| Total, NIST Reimbursable Services | | | | | | | | | | |
| WCF transfer | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reimbursables | 561 | $168,628 | 674 | $164,405 | 674 | $160,200 | 674 | $160,200 | 0 | 0 |
| WCF investments | 0 | 15,598 | 0 | 21,060 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grand Total | 561 | 184,226 | 674 | 185,465 | 674 | 160,200 | 674 | 160,200 | 0 | 0 |

[1/] Includes Baldrige Performance Excellence Program (BPEP).

[2/] Repayment of loan principal for past invested equipment over current year's investment, resulting a net negative amount.

**Department of Commerce**
**National Institute of Standards and Technology**
**Working Capital Fund**
**SUMMARY OF FINANCING**
(Dollar amounts in thousands)

| | 2022 Actual | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|
| Total Obligations | $184,226 | $185,465 | $160,200 | $160,200 | 0 |
| Offsetting collections from: | | | | | |
| Federal funds | (118,722) | (107,000) | (103,410) | (103,410) | 0 |
| Non-Federal sources | (56,396) | (78,465) | (56,790) | (56,790) | 0 |
| Total offsetting collections | (175,118) | (185,465) | (160,200) | (160,200) | 0 |
| Unobligated balance, start of year | (188,983) | (189,322) | (189,322) | (189,322) | 0 |
| Unobligated balance, end of year | 189,322 | 189,322 | 189,322 | 189,322 | 0 |
| Change in uncollected customer payments - Federal | (9,447) | 0 | 0 | 0 | 0 |
| Budget Authority | 0 | 0 | 0 | 0 | 0 |
| Financing: | | | | | |
| Transfer from other accounts | 0 | 0 | 0 | 0 | 0 |
| Appropriation | 0 | 0 | 0 | 0 | 0 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Working Capital Fund**
**PROGRAM AND PERFORMANCE: REIMBURSABLE OBLIGATIONS**
(Dollar amounts in thousands)

Activity: NIST Reimbursable Services

| Comparison by activity/subactivity | | 2022 Actual | | 2023 Enacted | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| Laboratory Programs | Pos./BA | 577 | $169,533 | 629 | $167,849 | 629 | $144,082 | 629 | $144,082 | 0 | 0 |
| | FTE/Obl. | 524 | 169,533 | 629 | 167,849 | 629 | 144,082 | 629 | 144,082 | 0 | 0 |
| Corporate Services | Pos./BA | 13 | 4,126 | 15 | 5,677 | 15 | 4,708 | 15 | 4,708 | 0 | 0 |
| | FTE/Obl. | 12 | 4,126 | 15 | 5,677 | 15 | 4,708 | 15 | 4,708 | 0 | 0 |
| Standards Coordination | Pos./BA | 28 | 9,221 | 28 | 9,939 | 28 | 9,810 | 28 | 9,810 | 0 | 0 |
| and Special Programs [1/] | FTE/Obl. | 25 | 9,221 | 28 | 9,939 | 28 | 9,810 | 28 | 9,810 | 0 | 0 |
| Hollings Manufacturing | Pos./BA | 0 | 1,346 | 2 | 2,000 | 2 | 1,600 | 2 | 1,600 | 0 | 0 |
| Extension Partnership | FTE/Obl. | 0 | 1,346 | 2 | 2,000 | 2 | 1,600 | 2 | 1,600 | 0 | 0 |
| WCF investments | Pos./BA | 618 | 184,226 | 674 | 185,465 | 674 | 160,200 | 674 | 160,200 | 0 | 0 |
| Total | FTE/Obl. | 561 | 184,226 | 674 | 185,465 | 674 | 160,200 | 674 | 160,200 | 0 | 0 |

[1/] Includes Baldrige Performance Excellence Program (BPEP).

**Department of Commerce**
**National Institute of Standards and Technology**
**Working Capital Fund**
**JUSTIFICATION OF PROGRAM AND PERFORMANCE**

Activity: NIST Working Capital Fund

There is no base funding for the program.

This Working Capital Fund (WCF) reflects the full-time equivalent employment and reimbursable obligations associated with the reimbursable work performed by NIST for other agencies, the public, and WCF investments. NIST's reimbursable services consist of technical work performed for other Federal agencies; state and local governments; and the private sector, including calibrations and special tests, advisory services, the sale of Standard Reference Materials and Baldrige Performance Excellence Program fees.

The unique measurement and standards expertise, developed with appropriated funding, gives NIST the capability to perform these services on a reimbursable basis. NIST accepts other agency work, based on an established set of criteria, which include: (1) the need for traceability of measurements to national standards; (2) the need for work which cannot or will not be addressed by the private sector; (3) work supported by legislation that authorizes or mandates certain services; (4) work which would result in an unavoidable conflict of interest if carried out by the private sector or regulatory agencies; and (5) requests by the private sector for NIST action or services.

**Department of Commerce**
**National Institute of Standards and Technology**
**Working Capital Fund**
**SUMMARY OF REQUIREMENTS BY OBJECT CLASS**
(Dollar amounts in thousands)

| | Object Class | 2022 Actual | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 11 | Personnel compensation | | | | | |
| 11.1 | Full-time permanent | $65,427 | $77,402 | $80,615 | $80,615 | 0 |
| 11.3 | Other than full-time permanent | 5,284 | 5,646 | 5,646 | 5,646 | 0 |
| 11.5 | Other personnel compensation | 1,059 | 1,059 | 1,059 | 1,059 | 0 |
| 11.9 | **Total personnel compensation** | 71,770 | 84,107 | 87,320 | 87,320 | 0 |
| 12.1 | Civilian personnel benefits | 27,089 | 29,276 | 29,845 | 29,845 | 0 |
| 13 | Benefits for former personnel | 0 | 0 | 0 | 0 | 0 |
| 21 | Travel and transportation of persons | 827 | 768 | 439 | 439 | 0 |
| 22 | Transportation of things | 264 | 190 | 109 | 109 | 0 |
| 23.1 | Rental payments to GSA | 29 | 26 | 26 | 26 | 0 |
| 23.2 | Rental payments to others | 0 | 0 | 0 | 0 | 0 |
| 23.3 | Communications, utilities, and miscellaneous charges | 3,371 | 3,303 | 3,246 | 3,246 | 0 |
| 24 | Printing and reproduction | 94 | 81 | 47 | 47 | 0 |
| 25.1 | Advisory and assistance services | 641 | 642 | 664 | 664 | 0 |
| 25.2 | Other services from non-Federal sources | 12,284 | 6,762 | 3,869 | 3,869 | 0 |
| 25.3 | Other goods and services from Federal sources | 9,454 | 8,963 | 7,081 | 7,081 | 0 |
| 25.5 | Research and development contracts | 7,813 | 5,279 | 3,020 | 3,020 | 0 |
| 25.7 | Operation and maintenance of equipment | 3,330 | 2,534 | 1,450 | 1,450 | 0 |
| 26 | Supplies and materials | 10,163 | 8,699 | 5,387 | 5,387 | 0 |
| 31 | Equipment | 25,163 | 25,163 | 12,163 | 12,163 | 0 |
| 32 | Land and structures | 24 | 0 | 0 | 0 | 0 |
| 41 | Grants, subsidies, and contributions | 11,908 | 9,672 | 5,534 | 5,534 | 0 |
| 42 | Insurance claims and indemnities | 0 | 0 | 0 | 0 | 0 |
| 43 | Interest and dividends | 2 | 0 | 0 | 0 | 0 |
| 99 | Total Obligations | 184,226 | 185,465 | 160,200 | 160,200 | 0 |

| Personnel Data | 2022 Actual | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|
| Full-time equivalent employment: | | | | | |
| Full-time permanent | 503 | 616 | 616 | 616 | 0 |
| Other than full-time permanent | 58 | 58 | 58 | 58 | 0 |
| Total | 561 | 674 | 674 | 674 | 0 |
| Authorized Positions: | | | | | |
| Full-time permanent | 601 | 657 | 657 | 657 | 0 |
| Other than full-time permanent | 17 | 17 | 17 | 17 | 0 |
| Total | 618 | 674 | 674 | 674 | 0 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Working Capital Fund**
**ADVISORY AND ASSISTANCE SERVICES**
(Obligations in thousands of dollars)

| | FY 2022 Actual | FY 2023 Enacted | FY 2024 Estimate |
|---|---|---|---|
| Consulting Services | | | |
| Management and professional support services | $641 | $642 | $664 |
| Studies, analyses, and evaluations | 0 | 0 | 0 |
| Engineering and technical services | 0 | 0 | 0 |
| Total | 641 | 642 | 664 |

Significant Activities

Advisory and assistance services funded by the Working Capital Fund represent services funded by reimbursable funds in support of reimbursable work conducted at NIST.

## Need for Advisory and Assistance Services

Advisory and Assistance services have been necessary to obtain additional expertise for conducting activities like the technical evaluation of the Department of Defense in its Manufacturing Innovation Institutes, for example.

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**Department of Commerce**
**National Institute of Standards and Technology**
**Creating Helpful Incentives to Produce Semiconductors**
**SUMMARY OF RESOURCE REQUIREMENTS**
(Dollar amounts in thousands)

| | Positions | FTE | Budget Authority | Direct Obligations | Appro-priation |
|---|---|---|---|---|---|
| 2023 Enacted | 321 | 264 | $6,995,000 | $1,013,100 | $7,000,000 |
| Less: Unobligated balance from prior year | 0 | 0 | 0 | 0 | 0 |
| 2024 Adjustments to Base | | | | | |
| Other Changes: | | | | | |
| Less: Mondatory non-base adjustments | (321) | (264) | (6,995,000) | (1,013,100) | (7,000,000) |
| 2024 Base | 0 | 0 | 0 | 0 | 0 |
| Plus: 2024 Program changes | 461 | 413 | 6,295,000 | 25,396,100 | 6,295,000 |
| Plus appropriation transferred to OIG | | | | | 5,000 |
| 2024 Estimate | 461 | 413 | 6,295,000 | 25,396,100 | 6,300,000 |

| **Comparison by activity with totals by activity** | | 2022 Actual | | 2023 Enacted | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| CHIPS Incentives Progran | Pos./Approp | 0 | $18,993,700 [1/] | 164 | $4,996,400 | 0 | 0 | 279 | $4,996,100 | 279 | $4,996,100 |
| | FTE/Obl. | 1 | 222 | 123 | 609,000 | 0 | 0 | 240 | 18,930,000 | 240 | 18,930,000 |
| CHIPS Research & Development | Pos./Approp | 0 | 4,999,000 | 157 | 1,998,600 | 0 | 0 | 182 | 1,298,900 | 182 | 1,298,900 |
| | FTE/Obl. | 0 | 0 | 141 | 404,000 | 0 | 0 | 173 | 6,466,100 | 173 | 6,466,100 |
| TOTALS | Pos./Approp | 0 | 23,992,700 [2/] | 321 | 6,995,000 [2/] | 0 | 0 | 461 | 6,295,000 [2/] | 461 | 6,295,000 |
| | FTE/Obl. | 1 | 222 | 264 | 1,013,000 | 0 | 0 | 413 | 25,396,100 | 413 | 25,396,100 |
| Adjustments for | | | | | | | | | | | |
| Recoveries | | | 0 | | 0 | | 0 | | 0 | | 0 |
| Refunds | | | 0 | | 0 | | 0 | | 0 | | 0 |
| Unobligated balance, start of year | | | 0 | | (23,992,478) | | 0 | | (29,974,478) | | (29,974,478) |
| Unobligated balance, end of year | | | 23,992,478 | | 29,974,478 | | 0 | | 10,873,378 | | 10,873,378 |
| Budget Authority/Appropriation | | | 23,992,700 | | 6,995,000 | | 0 | | 6,295,000 | | 6,295,000 |
| Adjustments for | | | | | | | | | | | |
| Plus appropriation transferred to OIG | | | 5,000 | | 5,000 | | 0 | | 5,000 | | 5,000 |
| Plus appropriation transferred to BIS | | | 2,300 | | 0 | | 0 | | 0 | | 0 |
| Appropriation | | | 24,000,000 | | 7,000,000 | | 0 | | 6,300,000 | | 6,300,000 |

[1/] Includes enacted CHIPS Loan program for $6 billion.
[2/] Enacted CHIPS appropriation here does not include tranfers to Office of Inspector General (OIG) and Bureau of Industry Standards (BIS).

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**Department of Commerce**
**National Institute of Standards and Technology**
**Creating Helpful Incentives to Produce Semiconductors**
**ADJUSTMENTS TO BASE**
(Dollar amounts in thousands)

| | Perm. Pos. | FTE | Amount |
|---|---|---|---|
| **Transfer** | … | … | 0 |
| **Adjustment** | … | … | 0 |
| **Financing** | … | … | 0 |
| **Other Changes:** | | | |
| FY 2023 pay raise | … | … | $414 |
| FY 2024 pay raise | … | … | 1,403 |
| Change in compensable days | … | … | 184 |
| Annualization of positions financed in FY 2023 | 0 | 57 | |
| Awards | … | … | 0 |
| Personnel benefits | | | 700 |
| Travel and transportation of persons | | | 15 |
| Rental Payments to GSA | … | … | 0 |
| Other services: | | | |
| Working Capital Fund Departmental Management | … | … | 0 |
| NARA storage costs | … | … | 0 |
| General pricing level adjustment | … | … | 10,197 |
| Subtotal, Other Changes | 0 | 57 | 12,913 |
| Total, Adjustments to base | 0 | 57 | 12,913 |

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**Department of Commerce**
**National Institute of Standards and Technology**
**Creating Helpful Incentives to Produce Semiconductors**
**PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS**
(Dollar amounts in thousands)

Activity: CHIPS Incentives Program and Incentive Loans

| Line Item | | 2022 Actual | | 2023 Enacted | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| CHIPS Incentives | Pos./Approp | 0 | $12,620,000 | 91 | $4,900,000 | 0 | $0 | 184 | $4,900,000 | 184 | $4,900,000 |
| | FTE/Obl. | 0 | 0 | 68 | 479,953 | 0 | 0 | 158 | 18,469,485 | 158 | 18,469,485 |
| CHIPS Incentives Admin | Pos./Approp | 0 | 373,700 | 73 | 96,400 | 0 | 0 | 95 | 96,100 | 95 | 96,100 |
| | FTE/Obl. | 1 | 222 | 55 | 20,047 | 0 | 0 | 82 | 24,515 | 82 | 24,515 |
| | **Pos./Approp** | **0** | **12,993,700** | **164** | **4,996,400** | **0** | **0** | **279** | **4,996,100** | **279** | **4,996,100** |
| **Incentives Program Subtotal** | **FTE/Obl.** | **1** | **222** | **123** | **500,000** | **0** | **0** | **240** | **18,494,000** | **240** | **18,494,000** |
| CHIPS Incentive Loans | Pos./Approp | 0 | $6,000,000 [1/] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | FTE/Obl. | 0 | 0 | 0 | $109,000 | 0 | 0 | 0 | $436,000 | 0 | $436,000 |
| **Total** | Pos./Approp | 0 | 18,993,700 | 164 | 4,996,400 | 0 | 0 | 279 | 4,996,100 | 279 | 4,996,100 |
| | FTE/Obl. | 1 | 222 | 123 | 609,000 | 0 | 0 | 240 | 18,930,000 | 240 | 18,930,000 |

[1/] Enacted CHIPS Loan program did not have its own account established until FY 2023 as way of unobligated balance transfer in MAX.

**Department of Commerce**
**National Institute of Standards and Technology**
**Creating Helpful Incentives to Produce Semiconductors**
**PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS**
(Dollar amounts in thousands)

Activity: CHIPS Research & Development

| Line Item | | 2022 Actual | | 2023 Enacted | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| CHIPS Metrology (Admin by STRS) | Pos./Approp | 0 | 390,000 | 111 | 100,000 | 0 | 0 | 111 | 29,000 | 111 | 29,000 |
| | FTE/Obl. | 0 | 0 | 106 | 115,641 | 0 | 0 | 111 | 136,350 | 111 | 136,350 |
| CHIPS R&D Admin (Admin by STRS) | Pos./Approp | 0 | 99,000 | 46 | 38,600 | 0 | 0 | 71 | 24,900 | 71 | 24,900 |
| | FTE/Obl. | 0 | 0 | 35 | 11,959 | 0 | 0 | 62 | 15,650 | 62 | 15,650 |
| **Mandatory CHIPS - STRS Subtotal** | **Pos./Approp** | **0** | **489,000** | **157** | **138,600** | **0** | **0** | **182** | **53,900** | **182** | **53,900** |
| | **FTE/Obl.** | **0** | **0** | **141** | **127,600** | **0** | **0** | **173** | **152,000** | **173** | **152,000** |
| CHIPS NSTC (Admin by ITS) | Pos./Approp | 0 | $1,960,000 | 0 | $1,323,000 | 0 | $0 | 0 | $735,000 | 0 | $735,000 |
| | FTE/Obl. | 0 | 0 | 0 | 96,198 | 0 | 0 | 0 | 3,408,250 | 0 | 3,408,250 |
| CHIPS NAPMP (Admin by ITS) | Pos./Approp | 0 | 2,450,000 | 0 | 490,000 | 0 | 0 | 0 | 392,000 | 0 | 392,000 |
| | FTE/Obl. | 0 | 0 | 0 | 120,248 | 0 | 0 | 0 | 2,832,646 | 0 | 2,832,646 |
| CHIPS MUSA (Admin by ITS) | Pos./Approp | 0 | 100,000 | 0 | 47,000 | 0 | 0 | 0 | 118,000 | 0 | 118,000 |
| | FTE/Obl. | 0 | 0 | 0 | 59,954 | 0 | 0 | 0 | 73,204 | 0 | 73,204 |
| **Mandatory CHIPS - ITS Subtotal** | **Pos./Approp** | **0** | **4,510,000** | **0** | **1,860,000** | **0** | **0** | **0** | **1,245,000** | **0** | **1,245,000** |
| | **FTE/Obl.** | **0** | **0** | **0** | **276,400** | **0** | **0** | **0** | **6,314,100** | **0** | **6,314,100** |
| **Total** | Pos./Approp | 0 | 4,999,000 | 157 | 1,998,600 | 0 | 0 | 182 | 1,298,900 | 182 | 1,298,900 |
| | FTE/Obl. | 0 | 0 | 141 | 404,000 | 0 | 0 | 173 | 6,466,100 | 173 | 6,466,100 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Mandatory Account: Creating Helpful Incentives to Produce Semiconductors for America**
**JUSTIFICATION OF PROGRAM AND PERFORMANCE**

Activity: Creating Helpful Incentives to Produce Semiconductors for America
Subactivity: Creating Helpful Incentives to Produce Semiconductors for America

Goal Statement

The CHIPS for America program, housed within NIST, intends to revitalize the domestic semiconductor industry and spur innovation while creating good-paying jobs in communities across the country. Investments from the program will catalyze economically sustainable long-term growth in the domestic semiconductor industry in support of our national and economic security.

The Department has established four strategic goals for the CHIPS for America program:

1. Invest in U.S. production of strategically important semiconductor chips, particularly those using leading-edge technologies.
2. Assure a sufficient, sustainable, and secure supply of older and current generation chips for national security purposes and for critical manufacturing industries.
3. Strengthen U.S. semiconductor research and development (R&D) leadership to catalyze and capture the next set of critical technologies, applications, and industries.
4. Grow a diverse semiconductor workforce and build strong communities that participate in the prosperity of the semiconductor industry.

Base Program

There is no base funding for the program.

Within sections 9902 and 9906 of Title XCIX (“Creating Helpful Incentives to Produce Semiconductors for America”) of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021, Pub. L. No. 116-283 (hereinafter, “the NDAA”) authorizes the Secretary of Commerce to establish certain semiconductor manufacturing and R&D activities collectively called the “CHIPS program”, subject to the availability of appropriations. The CHIPS Act of 2022, Division A of P.L. 117-167 amends P.L. the NDAA and appropriates $50 billion to the Department of Commerce through the Creating Helpful Incentives to Produce Semiconductors (CHIPS) for America Fund to implement the semiconductor programs. These funds provide for the CHIPS Act of 2022 related activities at NIST.

Section 9902 of the 2021 NDAA authorizes the Department to provide funding to eligible applicants to incentivize investment in facilities and equipment in the United States for the fabrication, assembly, testing, advanced packaging, production, or research and development of semiconductors, materials used to manufacture semiconductors, or semiconductor manufacturing equipment. The Department may provide

funding in various forms, including grants, cooperative agreements, other transactions, loans, and loan guarantees. The CHIPS Act of 2022 appropriates $39 billion for these purposes. With these funds, the Department will establish an incentives program to support the expansion of manufacturing capacity for mature nodes and to attract large-scale investments in advanced technologies such as leading-edge logic and memory.

Section 9906 of the 2021 NDAA authorizes the Department to establish a National Semiconductor Technology Center (NSTC) to conduct research and prototyping of advanced semiconductor technology and to establish a National Advanced Packaging Manufacturing Program (the “Advanced Packaging” program or “NAPMP”) led by the director of NIST. Section 9906 also authorizes NIST to establish up to three Manufacturing USA institutes to advance research and commercialization of semiconductor manufacturing technologies, and to carry out an R&D program to advance measurement science, standards, material characterization, instrumentation, testing, and manufacturing capabilities. The CHIPS Act of 2022 appropriates $11 billion for these purposes.

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**Department of Commerce**
**National Institute of Standards and Technology**
**Mandatory Account: Creating Helpful Incentives to Produce Semiconductors for America**
**JUSTIFICATION OF PROGRAM AND PERFORMANCE**

## Department of Commerce Cost Estimates for the Creating Helpful Incentives to Produce Semiconductors (CHIPS) for America Fund

### Background

Title XCIX ("Creating Helpful Incentives to Produce Semiconductors for America") of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021, Pub. L. No. 116-283 (hereinafter, "P.L. 116-283") authorizes the Secretary of Commerce to establish certain semiconductor related programs, subject to the availability of appropriations. The CHIPS Act of 2022, Division A of P.L. 117-167 (hereinafter, "the Act") amends P.L. 116-283 and appropriated $50 billion to the Department of Commerce through the Creating Helpful Incentives to Produce Semiconductors (CHIPS) for America Fund to implement the semiconductor programs.

### Requirement

Section 102 (a)(4)(A)(I) of the Act requires submission to Congress of detailed account, program, and project allocations of the full amount made available for the CHIPS for America Fund for fiscal year (FY) 2024, as part of the annual budget submission of the President under section 1105(a) of title 31, United States code. The President delegated to the Secretary of Commerce the authority to submit this cost estimate to the Congress by Presidential Memorandum signed on August 9, 2022. This cost estimate fulfills this requirement.

### Allocation of Amounts Appropriated for FY 2024

The Act appropriated $6.3 billion for FY 2024 to carry out sections 9902 and 9906 of P.L. 116-283, as amended. The Secretary of Commerce has delegated authority to perform the functions and duties necessary to implement section 9902 and 9906 to the Undersecretary of Commerce for Standards and Technology and Director of the National Institute of Standards and Technology (NIST) . In FY 2024, the Department will obligate up to $6.3 billion of this funding. These obligations are attributable to programmatic expenditures as well as the administrative costs of the programs funded via the Act. Allocations for the funds appropriated for FY 2024 by account, program, and project are detailed below:

#### Section 9902: Incentives Program – $5 Billion

P.L. 116-283, as amended, authorizes the Secretary of Commerce to set up a semiconductor incentives program. The program may provide Federal financial assistance to eligible entities (called "covered entities" in the law) to incentivize investment in facilities and equipment in the United States for the fabrication, assembly, testing, advanced packaging, production, or research and development (R&D) of semiconductors, materials used to manufacture semiconductors, or semiconductor manufacturing equipment. Consistent with the Act, the Department allocates $5 billion to the incentives program to continue to make financial assistance awards to spur investment in domestic production capacity for semiconductors to include addressing national security requirements.

Consistent with section 102(a)(2)(B)(ii), the Department allocates two percent ($100 million) of the amount appropriated for FY 2024 for salaries and expenses, administration, and oversight expenses necessary to carry out section 9902, with $3.9 million to be transferred to the Office of the Inspector General Office of the Inspector General (OIG) for oversight. This funding will support Federal staffing for administration and oversight, hiring of contractors and consultants, and other expenses necessary to execute the program.

With the amounts appropriated for FY 2024 for section 9902, the Department will:

- Award financial incentives to eligible applicants and
- Maintain and expand the resources—staffing, contracts, technology, equipment and facilities necessary to implement the program,.

Unspent amounts appropriated for FY 2022, FY 2023, and FY 2024 will be carried forward and used for administration and other amounts carried forward used to make awards under this section.

**Section 9906 – $1.3 billion**

The Act appropriated $1.3 billion to implement the programs authorized in section 9906 of P.L. 116-283, as amended. Below is an estimate of the allocation of funds across the different subsections of section 9906 based on in the expected-out year costs of the programs. These amounts are subject to change based on early implementation activities in FY 2024, including further definition of the requirements for the NSTC, NAPMP and metrology research. Consistent with section 102(a)(2)(B)(ii), the Department allocates two percent ($26 million) of the amount appropriated for FY 2024 for salaries and expenses, administration, and oversight expenses necessary to carry out section 9906, with $1.1 million to be transferred to the Office of the Inspector General Office of the Inspector General (OIG) for oversight.

**Section 9906(c): National Semiconductor Technology Center (NSTC) – $1.1 billion**

The Department allocates $1.1 billion of the funding provided for section 9906 for FY 2024 to provide ongoing funding for projects and operations of the NSTC.

With the amounts appropriated for FY 2024, the Department will:

- Fund programmatic activities and facility operations consistent with the plans of the NSTC (may include R&D grand challenges, operation of prototyping facilities, road mapping activities, investment in innovative new semiconductor technology, and relevant workforce development efforts).

**Section 9906(d): Advanced Packaging Manufacturing Program (NAPMP) – $95 million**

The Department allocates $95 million of the funding provided for section 9906 for FY 2024 to the NAPMP. With the amounts appropriated for FY 2024, the Department will:

- Provide continuing support for Advanced Packaging research and technology projects initiated in FY 2023, and

- Pay for the operational costs of packaging pilot facilities established in partnership with the NSTC.

**Section 9906(e): Metrology Program and Section 9906(f): Manufacturing USA Institute (MUSA) – $79 million**
The Department allocates $79 million of the funding provided for section 9906 for FY 2024 to MUSA and the Metrology program. With amounts appropriated for FY 2024, the Department will:

- Allocate $50 million to MUSA to provide continued support to the institutes established in FY 2023, as well to provide funding for R&D and workforce projects relevant to semiconductor manufacturing across the existing network. Allocate $29 million to the NIST metrology R&D programs to continue providing support for the metrology R&D program to enable advances and breakthroughs in measurement science, standards, material characterization, instrumentation, testing, and manufacturing capabilities.

**Section 9906 Administrative Costs – $26 million**
Consistent with section 102(a)(2)(B)(ii), the Department allocates two percent ($26 million) of the amount appropriated for FY 2024 for salaries and expenses, administration, and oversight expenses necessary to carry out section 9906, with $1.1 million to be transferred to the Office of the Inspector General Office of the Inspector General (OIG) for oversight. The Department will use these funds in FY 2024 to cover the costs of administrative functions, including continuing to hire Federal personnel for administration and oversight, acquire consulting and contract support resources, and pay other related costs such as facilities, equipment, travel, and general operating expenses.

Unspent amounts appropriated for FY 2022, FY 2023, and FY 2024 will be carried forward and used for administration and other amounts carried forward used to continue to advance R&D efforts described under this section.

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**Department of Commerce**
**National Institute of Standards and Technology**
**Creating Helpful Incentives to Produce Semiconductors (CHIPS)**
**SUMMARY OF REQUIREMENTS BY OBJECT CLASS**
(Dollar amounts in thousands)

| | Object Class | 2022 Actual | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 11 | Personnel compensation | | | | | |
| 11.1 | Full-time permanent | $133 | $33,366 | $0 | $54,903 | 54,903 |
| 11.3 | Other than full-time permanent | 0 | 2,605 | 0 | 2,605 | 2,605 |
| 11.5 | Other personnel compensation | 1 | 170 | 0 | 170 | 170 |
| 11.9 | **Total personnel compensation** | 134 | 36,141 | 0 | 57,678 | 57,678 |
| 12.1 | Civilian personnel benefits | 49 | 11,952 | 0 | 19,490 | 19,490 |
| 13 | Benefits for former personnel | 0 | 0 | 0 | 0 | 0 |
| 21 | Travel and transportation of persons | 0 | 760 | 0 | 719 | 719 |
| 22 | Transportation of things | 0 | 32 | 0 | 30 | 30 |
| 23.1 | Rental payments to GSA | 0 | 0 | 0 | 0 | 0 |
| 23.2 | Rental payments to others | 0 | 0 | 0 | 0 | 0 |
| 23.3 | Communications, utilities, and miscellaneous charges | 0 | 2,794 | 0 | 2,660 | 2,660 |
| 24 | Printing and reproduction | 0 | 19 | 0 | 18 | 18 |
| 25.1 | Advisory and assistance services | 0 | 5,145 | 0 | 4,857 | 4,857 |
| 25.2 | Other services from non-Federal sources | 32 | 470,012 | 0 | 18,439,924 | 18,439,924 |
| 25.3 | Other goods and services from Federal sources | 6 | 9,073 | 0 | 8,590 | 8,590 |
| 25.5 | Research and development contracts | 0 | 15,871 | 0 | 19,749 | 19,749 |
| 25.7 | Operation and maintenance of equipment | 1 | 1,092 | 0 | 1,051 | 1,051 |
| 26 | Supplies and materials | 1 | 2,119 | 0 | 2,009 | 2,009 |
| 31 | Equipment | 0 | 3,711 | 0 | 3,515 | 3,515 |
| 32 | Land and structures | 0 | 0 | 0 | 0 | 0 |
| 33 | Investments and loans | 0 | 109,000 | 0 | 436,000 | 436,000 |
| 41 | Grants, subsidies, and contributions | 0 | 345,279 | 0 | 6,399,810 | 6,399,810 |
| 42 | Insurance claims and indemnities | 0 | 0 | 0 | 0 | 0 |
| 43 | Interest and dividends | 0 | 0 | 0 | 0 | 0 |
| 99 | Total Obligations | 223 | 1,013,000 | 0 | 25,396,100 | 25,396,100 |

| | Object Class | 2022 Actual | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 99 | Total Obligations | 223 | $1,013,000 | 0 | $25,396,100 | 25,396,100 |
| | Adjustments for: | | | | | |
| | Recoveries | 0 | 0 | 0 | 0 | 0 |
| | Refunds of prior year paid obligations | 0 | 0 | 0 | 0 | 0 |
| | Unobligated balance from offsetting collections, start of year | 0 | (23,992,477) | 0 | (29,974,477) | (29,974,477) |
| | Unobligated balance transfer to CHIPS Loan Program | | | | | 0 |
| | Unobligated balance from offsetting collections, end of year | 23,992,477 | 29,974,477 | 0 | 10,873,377 | 10,873,377 |
| | Budgetary Resources - Mandatory Account | 23,992,700 | 6,995,000 | 0 | 6,295,000 | 6,295,000 |
| | Less: Offsetting collections | 0 | 0 | 0 | 0 | 0 |
| | Net Budget Authority - Mandatory Account | 23,992,700 | 6,995,000 | 0 | 6,295,000 | 6,295,000 |
| | Plus Transfers to Other Accounts | | | | | |
| | Appropriation transferred to OIG | 5,000 | 5,000 | 0 | 5,000 | 5,000 |
| | Appropriation transferred to BIS | 2,300 | 0 | 0 | 0 | 0 |
| | Appropriation | 24,000,000 | 7,000,000 | 0 | 6,300,000 | 6,300,000 |
| | | | | | 0 | |
| | Personnel Data | | | | | |
| | Full-time equivalent employment: | | | | | |
| | Full-time permanent: | 1 | 241 | 0 | 390 | 390 |
| | Other than full-time permanent | 0 | 23 | 0 | 23 | 23 |
| | Total | 1 | 264 | 0 | 413 | 413 |
| | Authorized Positions: | | | | | |
| | Full-time permanent | 0 | 297 | 0 | 437 | 437 |
| | Other than full-time permanent | 0 | 24 | 0 | 24 | 24 |
| | Total | 0 | 321 | 0 | 461 | 461 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Creating Helpful Incentives to Produce Semiconductors (CHIPS) Incentives Progran**
**SUMMARY OF REQUIREMENTS BY OBJECT CLASS**
(Dollar amounts in thousands)

| | Object Class | 2022 Actual | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 11 | Personnel compensation | | | | | |
| 11.1 | Full-time permanent | $133 | $17,165 | 0 | $34,525 | 34,525 |
| 11.3 | Other than full-time permanent | 0 | 0 | 0 | 0 | 0 |
| 11.5 | Other personnel compensation | 1 | 0 | 0 | 0 | 0 |
| 11.9 | **Total personnel compensation** | 134 | 17,165 | 0 | 34,525 | 34,525 |
| 12.1 | Civilian personnel benefits | 49 | 6,008 | 0 | 12,084 | 12,084 |
| 13 | Benefits for former personnel | 0 | 0 | 0 | 0 | 0 |
| 21 | Travel and transportation of persons | 0 | 318 | 0 | 325 | 325 |
| 22 | Transportation of things | 0 | 16 | 0 | 16 | 16 |
| 23.1 | Rental payments to GSA | 0 | 0 | 0 | 0 | 0 |
| 23.2 | Rental payments to others | 0 | 0 | 0 | 0 | 0 |
| 23.3 | Communications, utilities, and miscellaneous charges | 0 | 1,325 | 0 | 1,352 | 1,352 |
| 24 | Printing and reproduction | 0 | 8 | 0 | 8 | 8 |
| 25.1 | Advisory and assistance services | 0 | 2,104 | 0 | 2,146 | 2,146 |
| 25.2 | Other services from non-Federal sources | 32 | 465,996 | 0 | 18,436,344 | 18,436,344 |
| 25.3 | Other goods and services from Federal sources | 6 | 3,914 | 0 | 3,992 | 3,992 |
| 25.5 | Research and development contracts | 0 | 0 | 0 | 0 | 0 |
| 25.7 | Operation and maintenance of equipment | 1 | 603 | 0 | 615 | 615 |
| 26 | Supplies and materials | 1 | 931 | 0 | 949 | 949 |
| 31 | Equipment | 0 | 1,612 | 0 | 1,644 | 1,644 |
| 32 | Land and structures | 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 | 223 | 500,000 | 0 | 18,494,000 | 18,494,000 |

| | Object Class | 2022 Actual | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 99 | Total Obligations | 223 | $500,000 | 0 | $18,494,000 | 18,494,000 |
| | Adjustments for: | | | | | |
| | Recoveries | 0 | 0 | 0 | 0 | 0 |
| | Refunds of prior year paid obligations | 0 | 0 | 0 | 0 | 0 |
| | Unobligated balance from offsetting collections, start of year | 0 | (18,993,477) | 0 | (17,489,877) | (17,489,877) |
| | Unobligated balance transfer to CHIPS Loan Program | | 6,000,000 | | | 0 |
| | Unobligated balance from offsetting collections, end of year | 18,993,477 | 17,489,877 | 0 | 3,991,977 | 3,991,977 |
| | Budgetary Resources - Mandatory Account | 18,993,700 | 4,996,400 | 0 | 4,996,100 | 4,996,100 |
| | Less: Offsetting collections | 0 | 0 | 0 | 0 | 0 |
| | Net Budget Authority - Mandatory Account | 18,993,700 | 4,996,400 | 0 | 4,996,100 | 4,996,100 |
| | Plus Transfers to Other Accounts | | | | | |
| | Appropriation transferred to STRS | 489,000 | 138,600 | 0 | 53,900 | 53,900 |
| | Appropriation transferred to ITS | 4,510,000 | 1,860,000 | 0 | 1,245,000 | 1,245,000 |
| | Appropriation transferred to OIG | 5,000 | 5,000 | 0 | 5,000 | 5,000 |
| | Appropriation transferred to BIS | 2,300 | 0 | 0 | 0 | 0 |
| | Appropriation | 24,000,000 | 7,000,000 | 0 | 6,300,000 | 6,300,000 |
| | Personnel Data | | | | | |
| | Full-time equivalent employment: | | | | | |
| | Full-time permanent: | 1 | 123 | 0 | 240 | 0 |
| | Other than full-time permanent | 0 | 0 | 0 | 0 | 0 |
| | Total | 1 | 123 | 0 | 240 | 0 |
| | Authorized Positions: | | | | | |
| | Full-time permanent | 0 | 164 | 0 | 279 | 0 |
| | Other than full-time permanent | 0 | 0 | 0 | 0 | 0 |
| | Total | 0 | 164 | 0 | 279 | 0 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Creating Helpful Incentives to Produce Semiconductors (CHIPS) - Incentive Loans Program**
**SUMMARY OF REQUIREMENTS BY OBJECT CLASS**
(Dollar amounts in thousands)

| | Object Class | 2022 Actual | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 11 | Personnel compensation | | | | | |
| 11.1 | Full-time permanent | | | | | 0 |
| 11.3 | Other than full-time permanent | | | | | 0 |
| 11.5 | Other personnel compensation | | | | | 0 |
| 11.9 | **Total personnel compensation** | 0 | 0 | 0 | 0 | 0 |
| 12.1 | 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 from non-Federal sources | | | | | 0 |
| 25.3 | Other goods and services from Federal sources | | | | | 0 |
| 25.5 | Research and development contracts | | | | | 0 |
| 25.7 | Operation and maintenance of equipment | | | | | 0 |
| 26 | Supplies and materials | | | | | 0 |
| 31 | Equipment | | | | | 0 |
| 32 | Land and structures | | | | | 0 |
| 33 | Investments and loans | | 109,000 | 0 | 436,000 | |
| 41 | Grants, subsidies, and contributions | | | | | 0 |
| 42 | Insurance claims and indemnities | | | | | 0 |
| 43 | Interest and dividends | | | | | 0 |
| 99 | Total Obligations | 0 | 109,000 | 0 | 436,000 | 0 |

| | Object Class | 2022 Actual | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 99 | Total Obligations | 0 | $109,000 | $0 | $436,000 | 0 |
| | Adjustments for: | | | | | |
| | Recoveries | | | | | 0 |
| | Refunds of prior year paid obligations | | | | | 0 |
| | Unobligated balance from offsetting collections, start of year | | | 0 | (5,891,000) | 0 |
| | Unobligated balance transfer from CHIPS Incentives Program | | (6,000,000) | | | 0 |
| | Unobligated balance from offsetting collections, end of year | | 5,891,000 | 0 | 5,455,000 | 0 |
| | Budgetary Resources - Mandatory Account | 0 | 0 | 0 | 0 | 0 |
| | Less: Offsetting collections | 0 | 0 | 0 | 0 | 0 |
| | Net Budget Authority - Mandatory Account | 0 | 0 | 0 | 0 | 0 |
| | Plus Transfers to Other Accounts | | | | | 0 |
| | Appropriation | 0 | 0 | 0 | 0 | 0 |
| | Personnel Data | | | | | |
| | Full-time equivalent employment: | | | | | |
| | Full-time permanent: | | | | | 0 |
| | Other than full-time permanent | | | | | 0 |
| | Total | 0 | 0 | 0 | 0 | 0 |
| | Authorized Positions: | | | | | |
| | Full-time permanent | | | | | 0 |
| | Other than full-time permanent | | | | | 0 |
| | Total | 0 | 0 | 0 | 0 | 0 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Creating Helpful Incentives to Produce Semiconductors (CHIPS) - STRS**
**SUMMARY OF REQUIREMENTS BY OBJECT CLASS**
(Dollar amounts in thousands)

| | Object Class | 2022 Actuals | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 11 | Personnel compensation | | | | | |
| 11.1 | Full-time permanent | 0 | $16,201 | 0 | $20,378 | 20,378 |
| 11.3 | Other than full-time permanent | 0 | 2,605 | 0 | 2,605 | 2,605 |
| 11.5 | Other personnel compensation | 0 | 170 | 0 | 170 | 170 |
| 11.9 | **Total personnel compensation** | 0 | 18,976 | 0 | 23,153 | 23,153 |
| 12.1 | Civilian personnel benefits | 0 | 5,944 | 0 | 7,406 | 7,406 |
| 13 | Benefits for former personnel | 0 | 0 | 0 | 0 | 0 |
| 21 | Travel and transportation of persons | 0 | 442 | 0 | 394 | 394 |
| 22 | Transportation of things | 0 | 16 | 0 | 14 | 14 |
| 23.1 | Rental payments to GSA | 0 | 0 | 0 | 0 | 0 |
| 23.2 | Rental payments to others | 0 | 0 | 0 | 0 | 0 |
| 23.3 | Communications, utilities, and miscellaneous charges | 0 | 1,469 | 0 | 1,308 | 1,308 |
| 24 | Printing and reproduction | 0 | 11 | 0 | 10 | 10 |
| 25.1 | Advisory and assistance services | 0 | 3,041 | 0 | 2,711 | 2,711 |
| 25.2 | Other services from non-Federal sources | 0 | 4,016 | 0 | 3,580 | 3,580 |
| 25.3 | Other goods and services from Federal sources | 0 | 5,159 | 0 | 4,598 | 4,598 |
| 25.5 | Research and development contracts | 0 | 15,871 | 0 | 19,749 | 19,749 |
| 25.7 | Operation and maintenance of equipment | 0 | 489 | 0 | 436 | 436 |
| 26 | Supplies and materials | 0 | 1,188 | 0 | 1,060 | 1,060 |
| 31 | Equipment | 0 | 2,099 | 0 | 1,871 | 1,871 |
| 32 | Land and structures | 0 | 0 | 0 | 0 | 0 |
| 41 | Grants, subsidies, and contributions | 0 | 68,879 | 0 | 85,710 | 85,710 |
| 42 | Insurance claims and indemnities | 0 | 0 | 0 | 0 | 0 |
| 43 | Interest and dividends | 0 | 0 | 0 | 0 | 0 |
| 99 | Total Obligations | 0 | 127,600 | 0 | 152,000 | 152,000 |

| | Object Class | 2022 Enacted | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 99 | Total Obligations | 0 | $127,600 | 0 | 152,000 | 152,000 |
| | Adjustments for: | | | | | |
| | Unobligated balance from offsetting collections, start of year | 0 | (489,000) | 0 | (500,000) | (500,000) |
| | Unobligated balance from offsetting collections, end of year | 489,000 | 500,000 | 0 | 401,900 | 401,900 |
| | Budgetary Resources - Mandatory Account | 489,000 | 138,600 | 0 | 53,900 | 53,900 |
| | Plus Transfers from Other Accounts | (489,000) | (138,600) | 0 | (53,900) | (53,900) |
| | Appropriation | 0 | 0 | 0 | 0 | 0 |
| | Personnel Data | | | | | |
| | Full-time equivalent employment: | | | | | |
| | Full-time permanent: | 0 | 118 | 0 | 150 | 0 |
| | Other than full-time permanent | 0 | 23 | 0 | 23 | 0 |
| | Total | 0 | 141 | 0 | 173 | 0 |
| | Authorized Positions: | | | | | |
| | Full-time permanent | 0 | 133 | 0 | 158 | 0 |
| | Other than full-time permanent | 0 | 24 | 0 | 24 | 0 |
| | Total | 0 | 157 | 0 | 182 | 0 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Creating Helpful Incentives to Produce Semiconductors (CHIPS) - ITS**
**SUMMARY OF REQUIREMENTS BY OBJECT CLASS**
(Dollar amounts in thousands)

| | Object Class | 2022 Actual | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 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 |
| 11.9 | **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 |
| 23.3 | Communications, utilities, and miscellaneous charges | 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 from non-Federal sources | 0 | 0 | 0 | 0 | 0 |
| 25.3 | Other goods and services from Federal sources | 0 | 0 | 0 | 0 | 0 |
| 25.5 | Research and development contracts | 0 | 0 | 0 | 0 | 0 |
| 25.7 | Operation and maintenance of equipment | 0 | 0 | 0 | 0 | 0 |
| 26 | Supplies and materials | 0 | 0 | 0 | 0 | 0 |
| 31 | Equipment | 0 | 0 | 0 | 0 | 0 |
| 32 | Land and structures | 0 | 0 | 0 | 0 | 0 |
| 41 | Grants, subsidies, and contributions | 0 | $276,400 | 0 | $6,314,100 | 6,314,100 |
| 42 | Insurance claims and indemnities | 0 | 0 | 0 | 0 | 0 |
| 43 | Interest and dividends | 0 | 0 | 0 | 0 | 0 |
| 99 | Total Obligations | 0 | 276,400 | 0 | 6,314,100 | 6,314,100 |

| | Object Class | 2022 Actual | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 99 | Total Obligations | 0 | $276,400 | 0 | $6,314,100 | $6,314,100 |
| | Adjustments for: | | | | | |
| | Recoveries | 0 | 0 | 0 | 0 | 0 |
| | Refunds of prior year paid obligations | 0 | 0 | 0 | 0 | 0 |
| | Unobligated balance from offsetting collections, start of year | 0 | (4,510,000) | 0 | (6,093,600) | (6,093,600) |
| | Unobligated balance from offsetting collections, end of year | 4,510,000 | 6,093,600 | 0 | 1,024,500 | 1,024,500 |
| | Budgetary Resources - Mandatory Account | 4,510,000 | 1,860,000 | 0 | 1,245,000 | 1,245,000 |
| | Less: Offsetting collections | 0 | 0 | 0 | 0 | 0 |
| | Net Budget Authority - Mandatory Account | 4,510,000 | 1,860,000 | 0 | 1,245,000 | 1,245,000 |
| | Plus Transfers from Other Accounts | (4,510,000) | (1,860,000) | 0 | (1,245,000) | (1,245,000) |
| | Appropriation | 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 |

**Department of Commerce**
**National Institute of Standards and Technology**
**Creating Helpful Incentives to Produce Semiconductors (CHIPS)**
**ADVISORY AND ASSISTANCE SERVICES**
(Obligations in thousands of dollars)

| | FY 2022 Actual | FY 2023 Enacted | FY 2024 Estimate |
|---|---|---|---|
| Consulting Services | | | |
| Management and professional support services | 0 | $5,145 | $4,857 |
| Studies, analyses, and evaluations | 0 | 0 | 0 |
| Engineering and technical services | 0 | 0 | 0 |
| Total | 0 | $5,145 | 4,857 |

Significant Activities

Advisory and assistance services funded by mandatory resources through the Creating Helpful Incentives to Produce Semiconductors (CHIPS) for America Fund to implement the semiconductor programs.

Need for Advisory and Assistance Services

Advisory and Assistance services have been necessary to obtain additional expertise to conduct research and develop new standards, technologies and applications to implement the semiconductor programs in support of requirements in the CHIPS Act of 2022.

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**Department of Commerce**
**National Institute of Standards and Technology**
**NIST Public Safety Communications Research Fund**
**SUMMARY OF RESOURCE REQUIREMENTS**
(Dollar amounts in thousands)

| | Positions | FTE | Budget Authority | Direct Obligations | Appro-priation |
|---|---|---|---|---|---|
| President's Budget, 2023 | 0 | 0 | 0 | 0 | 0 |
| 2024 Adjustments to Base | 0 | 0 | 0 | 0 | 0 |
| 2024 Base/Estimate | 0 | 0 | 0 | 0 | 0 |

| **Comparison by activity/subactivity with totals by activity** | | 2022 Actuals | | 2023 Enacted | | 2024 Base | | 2024 Estimate | | Increase/(Decrease) from 2024 Base | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| NIST Public Safety Communications Research Fund | Pos/Approp | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | FTE/Obl. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Budget Authority/Appropriation | | | 0 | | 0 | | 0 | | 0 | | 0 |

**Department of Commerce**
**National Institute of Standards and Technology**
**NIST Public Safety Communications Research Fund**
**PROGRAM AND PERFORMANCE: REIMBURSABLE OBLIGATIONS**
**(Dollar amounts in thousands)**

| Comparison by activity/subactivity | | 2022 Actuals | | 2023 President's Budget | | 2024 Base | | 2024 Estimate | | Increase/(Decrease) from 2024 Base | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| NIST Public Safety Communications Research Fund | Pos/Approp | 111 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | FTE/Obl. | 85 | $47,701 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Department of Commerce**
**National Institute of Standards and Technology**
**NIST Public Safety Communications Research Fund**
**SUMMARY OF FINANCING**
**(Dollar amounts in thousands)**

| | 2022 Actuals | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|
| Total Obligations | $47,701 | 0 | 0 | 0 | 0 |
| Offsetting collections from: | | | | | |
| Unobligated balance from offsetting collections, start of year | 0 | 0 | 0 | 0 | 0 |
| Unobligated balance from offsetting collections, end of year | 0 | 0 | | 0 | |
| Adjustments for: | | | | | |
| Recoveries | (929) | 0 | 0 | 0 | 0 |
| Refunds | 0 | 0 | 0 | 0 | 0 |
| Unobligated balance, start of year | (46,816) | 0 | 0 | 0 | 0 |
| Unobligated balance from offsetting collections, end of year | 0 | 0 | 0 | 0 | 0 |
| Non-carryover/expired | 44 | 0 | 0 | 0 | 0 |
| Budget Authority/Appropriation | 0 | 0 | 0 | 0 | 0 |

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**Department of Commerce**
**National Institute of Standards and Technology**
**NIST Public Safety Communications Research Fund**
**PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS**
(Dollar amounts in thousands)

Activity: NIST Public Safety Communications Research Fund

| Line Item | | 2022 Actuals | | 2023 Enacted | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| NIST Public Safety Communications | Pos/Approp | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Research Fund | FTE/Obl. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Department of Commerce**
**National Institute of Standards and Technology**
**NIST Public Safety Communications Research Fund**
**PROGRAM AND PERFORMANCE: REIMBURSABLE OBLIGATIONS**
(Dollar amounts in thousands)

Activity: NIST Public Safety Communications Research Fund

| Comparison by activity/subactivity | | 2022 Actuals | | 2023 Enacted | | 2024 Base | | 2024 Estimate | | Increase/(Decrease) from 2024 Base | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| NIST Public Safety Communications | Pos/Approp | 111 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Research Fund | FTE/Obl. | 85 | $47,701 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Department of Commerce**
**National Institute of Standards and Technology**
**NIST Public Safety Communications Research Fund**
**JUSTIFICATION OF PROGRAM AND PERFORMANCE**

Activity: NIST Public Safety Communications Research Fund

There is no base funding for the program.

As part of the Middle-Class Tax Relief and Job Creation Act of 2012, NIST has one-time (non-recurring) mandatory resources through the Public Safety Communications Research Fund (PSCRF) to help develop cutting-edge wireless technologies for public safety users. The PSCRF has authorized $300.0 million in mandatory funds from spectrum auction proceeds for NIST. In partnership with industry and public safety organizations, NIST will continue to conduct research and develop new standards, technologies, and applications to advance public safety communications in support of FirstNet's efforts to build an interoperable nationwide broadband network for first responders.

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**Department of Commerce**
**National Institute of Standards and Technology**
**NIST Public Safety Communications Research Fund**
**SUMMARY OF REQUIREMENTS BY OBJECT CLASS - REIMBURSABLE OBLIGATIONS**
(Dollar amounts in thousands)

| | Object Class | 2022 Actuals | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 11 | Personnel compensation | | | | | |
| 11.1 | Full-time permanent | $8,543 | 0 | 0 | 0 | 0 |
| 11.3 | Other than full-time permanent | 2,605 | 0 | 0 | 0 | 0 |
| 11.5 | Other personnel compensation | 170 | 0 | 0 | 0 | 0 |
| 11.9 | **Total personnel compensation** | 11,318 | 0 | 0 | 0 | 0 |
| 12.1 | Civilian personnel benefits | 4,276 | 0 | 0 | 0 | 0 |
| 13 | Benefits for former personnel | 0 | 0 | 0 | 0 | 0 |
| 21 | Travel and transportation of persons | 306 | 0 | 0 | 0 | 0 |
| 22 | Transportation of things | 11 | 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 |
| 23.3 | Communications, utilities, and miscellaneous charges | 1,015 | 0 | 0 | 0 | 0 |
| 24 | Printing and reproduction | 8 | 0 | 0 | 0 | 0 |
| 25.1 | Advisory and assistance services | 2,104 | 0 | 0 | 0 | 0 |
| 25.2 | Other services from non-Federal sources | 2,778 | 0 | 0 | 0 | 0 |
| 25.3 | Other goods and services from Federal sources | 3,569 | 0 | 0 | 0 | 0 |
| 25.5 | Research and development contracts | 3,690 | 0 | 0 | 0 | 0 |
| 25.7 | Operation and maintenance of equipment | 338 | 0 | 0 | 0 | 0 |
| 26 | Supplies and materials | 822 | 0 | 0 | 0 | 0 |
| 31 | Equipment | 1,452 | 0 | 0 | 0 | 0 |
| 32 | Land and structures | 0 | 0 | 0 | 0 | 0 |
| 41 | Grants, subsidies, and contributions | 16,014 | 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 | 47,701 | 0 | 0 | 0 | 0 |

| | Object Class | 2022 Actuals | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 99 | Total Obligations | $47,701 | 0 | 0 | 0 | 0 |
| | Adjustments for: | | | | | |
| | Recoveries | (929) | 0 | 0 | 0 | 0 |
| | Refunds of prior year paid obligations | 0 | 0 | 0 | 0 | 0 |
| | Unobligated balance from offsetting collections, start of year | (46,816) | 0 | 0 | 0 | 0 |
| | Unobligated balance from offsetting collections, end of year | 0 | 0 | 0 | 0 | 0 |
| | Non-carryover/expired | 44 | 0 | 0 | 0 | 0 |
| | Appropriation | 0 | 0 | 0 | 0 | 0 |
| | Personnel Data | | | | | |
| | Full-time equivalent employment: | | | | | |
| | Full-time permanent: | 62 | 0 | 0 | 0 | 0 |
| | Other than full-time permanent | 23 | 0 | 0 | 0 | 0 |
| | Total | 85 | 0 | 0 | 0 | 0 |
| | Authorized Positions: | | | | | |
| | Full-time permanent | 87 | 0 | 0 | 0 | 0 |
| | Other than full-time permanent | 24 | 0 | 0 | 0 | 0 |
| | Total | 111 | 0 | 0 | 0 | 0 |

**Department of Commerce**
**National Institute of Standards and Technology**
**PUBLIC SAFETY COMMUNICATIONS RESEARCH FUND**
**APPROPRIATION LANGUAGE AND CODE CITATIONS**

1. For necessary expenses of the National Institute of Standards and Technology,

   U.S.C. 272; 273; 278b-j; p

   U.S.C. 272; 273; 278b-j; p provides basic authority for the performance of the functions and activities of the National Institute of Standards and Technology, authorizes appropriations for these purposes to be provided to the general public and specific institutions, governments, firms, and individuals, and requires the notification of Congress of a reprogramming of funds that exceeds a limit specified in public law.

2. MANDATORY ACCOUNT: Public Safety Communications Research Fund (PSCRF): As part of the National Wireless Initiative included in the American Jobs Act, NIST also has resources through the Wireless Innovation (WIN) Fund to help develop cutting-edge wireless technologies for public safety users. The WIN Fund, $300 million in mandatory funds for NIST from the spectrum auction proceeds, helps industry and public safety organizations conduct research and develop new standards, technologies and applications to advance public safety communications in support of the initiative's efforts to build an interoperable nationwide broadband network for first responders. P.L. 112-96 established the Public Safety Communications Research Fund per section 6303 of the Middle Class Tax Relief and Job Creation Act of 2012. The fund’s availability extends through 2022 and began to execute in FY 2015; $92.7M was transferred to NIST in FY 2015, $7.3M was released from sequester in FY 2016, an additional $186.4M was transferred in FY 2016, and $13.6M was released from sequester in FY 2017. This WIN funding expired at the end of FY 2022.

**Department of Commerce**
**National Institute of Standards and Technology**
**NIST Public Safety Communications Research Fund**
**ADVISORY AND ASSISTANCE SERVICES**
(Obligations in thousands of dollars)

| | FY 2022 Actual | FY 2023 Enacted | FY 2024 Estimate |
|---|---|---|---|
| Consulting Services | | | |
| Management and professional support services | $2,104 | 0 | 0 |
| Studies, analyses, and evaluations | 0 | 0 | 0 |
| Engineering and technical services | 0 | 0 | 0 |
| Total | 2,104 | 0 | 0 |

Significant Activities

Advisory and assistance services funded by one-time (non-recurring) mandatory resources through the Public Safety Communications Research Fund (PSCRF) to help develop cutting-edge wireless technologies for public safety users.

## Need for Advisory and Assistance Services

Advisory and Assistance services have been necessary to obtain additional expertise to conduct research and develop new standards, technologies and applications to advance public safety communications in support of FirstNet's efforts to build an interoperable nationwide broadband network for first responders.

**Department of Commerce**
**National Institute of Standards and Technology**
**American Rescue Plan Act (P.L. 117-2)**
**SUMMARY OF RESOURCE REQUIREMENTS - MANDATORY**
(Dollar amounts in thousands)

| | Positions | FTE | Budget Authority | Direct Obligations | Appro-priation |
|---|---|---|---|---|---|
| Enacted, 2023 | 0 | 0 | 0 | 7 | 0 |
| Less: American Rescue Plan Act (P.L. 117-2) | 0 | 0 | 0 | 0 | 0 |
| 2024 Base/Estimate | 0 | 0 | 0 | 7 | 0 |

| **Comparison by activity with totals by activity** | | 2022 Actual | | 2023 Enacted | | 2024 Base | | 2024 Estimate | | Increase/(Decrease) from 2024 Base | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| American Rescue Plan Act | Pos/Approp | 18 | $59,961 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| (P.L. 117-2) | FTE/Obl. | 19 | 59,954 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| Adjustments for | | | | | | | | | | | |
| Recoveries | | | | | | | | | | | |
| Refunds | | | | | | | | | | | |
| Unobligated balance, start of year | | | | | (7) | | | | | | |
| Unobligated balance, end of year | | | 7 | | | | | | | | |
| Budget Authority/Appropriation | | | 59,961 | | 0 | | 0 | | 0 | | 0 |

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**Department of Commerce**
**National Institute of Standards and Technology**
**American Rescue Plan Act (P.L. 117-2)**
**PROGRAM AND PERFORMANCE: MANDATORY**
(Dollar amounts in thousands)

Activity: American Rescue Plan Act (P.L. 117-2)

| Line Item | | 2022 Actual | | 2023 Enacted | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| American Rescue Plan Act | Pos/Approp | 18 | $59,961 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| (P.L. 117-2) | FTE/Obl. | 19 | 59,954 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |

**Department of Commerce**
**National Institute of Standards and Technology**
**American Rescue Plan Act (P.L. 117-2)**
**JUSTIFICATION OF PROGRAM AND PERFORMANCE**

Activity: American Rescue Plan Act (P.L. 117-2)

There is no base funding for the program.

Public Law 117-2, The American Rescue Plan Act, (ARP Act) in Subtitle E – Science and Technology, Section 7501 (as enacted March 11, 2021) made available $150,000,000 for the National Institute of Standards and Technology's (NIST).

SEC. 7501. NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY.

In addition to amounts otherwise made available, there are appropriated to the National Institute of Standards and Technology for fiscal year 2021, out of any money in the Treasury not otherwise appropriated, $150,000,000, to remain available until September 30, 2022, to fund awards for research, development, and testbeds to prevent, prepare for, and respond to coronavirus. None of the funds provided by this section shall be subject to cost share requirements.

Funds expired for obligation in FY 2022 but outlays continue into FY 2024.

**Department of Commerce**
**National Institute of Standards and Technology**
**American Rescue Plan Act (P.L. 117-2)**
**SUMMARY OF REQUIREMENTS BY OBJECT CLASS**
(Dollar amounts in thousands)

| | Object Class | 2022 Actual | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 11 | Personnel compensation | | | | | |
| 11.1 | Full-time permanent | $2,743 | 7 | 0 | 0 | 0 |
| 11.3 | Other than full-time permanent | 0 | 0 | 0 | 0 | 0 |
| 11.5 | Other personnel compensation | 85 | 0 | 0 | 0 | 0 |
| 11.9 | **Total personnel compensation** | 2,828 | 7 | 0 | 0 | 0 |
| 12.1 | Civilian personnel benefits | 1,008 | 0 | 0 | 0 | 0 |
| 13 | Benefits for former personnel | 0 | 0 | 0 | 0 | 0 |
| 21 | Travel and transportation of persons | 12 | 0 | 0 | 0 | 0 |
| 22 | Transportation of things | 5 | 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 |
| 23.3 | Communications, utilities, and miscellaneous charges | 310 | 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 from non-Federal sources | 1,081 | 0 | 0 | 0 | 0 |
| 25.3 | Other goods and services from Federal sources | 345 | 0 | 0 | 0 | 0 |
| 25.5 | Research and development contracts | 4 | 0 | 0 | 0 | 0 |
| 25.7 | Operation and maintenance of equipment | 265 | 0 | 0 | 0 | 0 |
| 26 | Supplies and materials | 109 | 0 | 0 | 0 | 0 |
| 31 | Equipment | 160 | 0 | 0 | 0 | 0 |
| 32 | Land and structures | 0 | 0 | 0 | 0 | 0 |
| 41 | Grants, subsidies, and contributions | 53,827 | 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 | 59,954 | 7 | 0 | 0 | 0 |

| | Object Class | 2022 Actual | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 99 | Total Obligations | $59,954 | 7 | 0 | 0 | 0 |
| | Adjustments for: | | | | | |
| | Recoveries | 0 | 0 | 0 | 0 | 0 |
| | Refunds of prior year paid obligations | 0 | 0 | 0 | 0 | 0 |
| | Unobligated balance from offsetting collections, start of year | 0 | (7) | 0 | 0 | 0 |
| | Unobligated balance from offsetting collections, end of year | 7 | 0 | 0 | 0 | 0 |
| | Appropriation | 59,961 | 0 | 0 | 0 | 0 |
| | Personnel Data | | | | | |
| | Full-time equivalent employment: | | | | | |
| | Full-time permanent: | 18 | 0 | 0 | 0 | 0 |
| | Other than full-time permanent | 0 | 0 | 0 | 0 | 0 |
| | Total | 18 | 0 | 0 | 0 | 0 |
| | Authorized Positions: | | | | | |
| | Full-time permanent | 19 | 0 | 0 | 0 | 0 |
| | Other than full-time permanent | 0 | 0 | 0 | 0 | 0 |
| | Total | 19 | 0 | 0 | 0 | 0 |

**Department of Commerce**
**National Institute of Standards and Technology**
**INDUSTRIAL TECHNOLOGY SERVICES - MANDATORY**
**APPROPRIATION LANGUAGE AND CODE CITATIONS**

1. For necessary expenses of the National Institute of Standards and Technology,

   15 U.S.C. 272; 273; 278b-j; p

   15 U.S.C. 272; 273; 278b-j; p provides basic authority for the performance of the functions and activities of the National Institute of Standards and Technology, authorizes appropriations for these purposes to be provided to the general public and specific institutions, governments, firms, and individuals, and requires the notification of Congress of a reprogramming of funds that exceeds a limit specified in public law.

2. MANDATORY ACCOUNT: American Rescue Plan Act: Public Law 117-2, The American Rescue Plan Act, (ARP Act) in Subtitle E – Science and Technology, Section 7501 (as enacted March 11, 2021) made available $150,000,000 for the National Institute of Standards and Technology's (NIST), to remain available until September 30, 2022, to fund awards for research, development, and testbeds to prevent, prepare for, and respond to coronavirus. None of the funds provided by this section shall be subject to cost share requirements. This ARP funding expired at the end of FY 2022.

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**Department of Commerce**

**National Institute of Standards and Technology**

**REIMBURSABLE PROGRAM AND WORKING CAPITAL FUND INVESTMENTS**

(Dollar amounts in thousands)

| | FY 2022 Actual | FY 2023 Enacted | FY 2024 Estimate |
|---|---|---|---|
| Department of Defense | | | |
| Air Force | $16,636 | $15,062 | $15,290 |
| Army | 1,903 | 2,190 | 2,190 |
| Navy | 2,133 | 2,666 | 2,266 |
| Other, Department of Defense | 27,212 | 20,894 | 20,466 |
| Subtotal, Department of Defense | 47,884 | 40,812 | 40,212 |
| Department of Agriculture | 179 | 142 | 500 |
| Department of Commerce | 23,368 | 25,363 | 24,770 |
| Department of Energy | 3,574 | 3,251 | 2,648 |
| Dept. of Health & Human Services | 3,675 | 3,746 | 3,621 |
| Dept. of Homeland Security | 9,181 | 8,416 | 8,266 |
| Dept. of Housing & Urban Development | 35 | 50 | 0 |
| Department of the Interior | 392 | 200 | 200 |
| Department of Justice | 7,133 | 8,336 | 8,811 |
| Department of State | 0 | 1,000 | 0 |
| Department of Transportation | 1,558 | 559 | 480 |
| Department of the Treasury | 314 | 300 | 200 |
| Department of Veterans Affairs | 86 | 100 | 100 |
| Environmental Protection Agency | 0 | 115 | 0 |
| General Services Administration | 5 | 7 | 6 |
| National Aeronautics & Space Admin. | 7,743 | 7,390 | 7,280 |
| National Science Foundation | 1,806 | 3,200 | 3,200 |
| Nuclear Regulatory Commission | 416 | 1,091 | 216 |
| Other | 4,353 | 2,922 | 2,900 |
| Subtotal, Other Agency | 111,702 | 107,000 | 103,410 |

| | FY 2022 Actual | FY 2023 Enacted | FY 2024 Estimate |
|---|---|---|---|
| Calibrations & Testing | $7,646 | $7,927 | $7,920 |
| Technical & Advisory Services | 28,306 | 29,696 | 29,145 |
| Standard Reference Materials | 20,974 | 19,782 | 19,725 |
| Subtotal, Other Reimbursables | 56,926 | 57,405 | 56,790 |
| Total, Reimbursable Program | 168,628 | 164,405 | 160,200 |
| Equipment Investments | 14,508 | 35,704 | 35,704 |
| IE Amortization | (18,384) | (14,644) | (35,704) |
| WCF Operating Adjustments | 19,474 | 0 | 0 |
| Total, WCF Investments | 15,598 | 21,060 | 0 |
| Total, Reimbursable Program and WCF Investments | 184,226 | 185,465 | 160,200 |

## Summary of National Institute of Standards and Technology (NIST)

The operations of the NIST Working Capital Fund are reported in a program and financing schedule printed in the President's Budget, as well as reflected in the reimbursable amounts throughout this budget. The fund finances the initial costs of work performed by NIST and is reimbursed by applicable appropriations and advances or reimbursements from other agencies. A detailed cost accounting system is used to ensure that the actual cost of work performed for each job or task is recorded and identified with the appropriate source of financing. In addition to its function as a revolving fund, the Working Capital Fund is also used to handle annual and sick leave on an accrued basis, to acquire equipment as an investment to be recovered through amortization charges to programs, to distribute indirect costs to programs as overhead, to carry the recoverable costs associated with the production of Standard Reference Materials, and to carry supply inventories until issued for program use.

The table below summarizes the total NIST program, according to the source of financing. Following this table is a summary of the NIST reimbursable program by sponsor and source of support.

### Summary of Total NIST Discretionary Program [1/]

(Obligations in thousands)

| | FY 2022 | | | FY 2023 | | | FY 2024 | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Source and Use of Funds Spent | Perm. Pos. [2/] | FTE | Oblig. | Perm. Pos. [2/] | FTE | Oblig. | Perm. Pos. [2/] | FTE | Oblig. | Approp. Requested |
| Direct Funding | | | | | | | | | | |
| Scientific and technical research and services | 2,669 | 2,384 | $833,102 | 2,808 | 2,661 | $1,068,305 | 2,931 | 2,777 | $996,448 | $994,948 |
| Industrial technology services | 107 | 104 | 178,038 | 131 | 123 | 245,996 | 138 | 130 | 374,872 | 374,872 |
| Construction of research facilities | 152 | 145 | 96,171 | 156 | 151 | 656,259 | 152 | 148 | 262,148 | 262,148 |
| Total, direct funding | 2,928 | 2,633 | 1,107,311 | 3,095 | 2,935 | 1,970,560 | 3,221 | 3,055 | 1,633,468 | 1,631,968 |
| Reimbursable Funding and WCF Investments | | | | | | | | | | |
| Construction of research facilities - building surcharge | 0 | 0 | 1,033 | 0 | 0 | 932 | 0 | 0 | 0 | |
| Research, development and supporting services: | | | | | | | | | | |
| Federal government | 405 | 366 | 111,702 | 441 | 441 | 107,000 | 441 | 441 | 103,410 | |
| Calibrations and tests, technical and advisory services: | | | | | | | | | | |
| Federal government | 15 | 13 | 4,440 | 16 | 16 | 4,642 | 16 | 16 | 4,564 | |
| Public and non-federal government | 90 | 83 | 27,678 | 99 | 99 | 28,931 | 99 | 99 | 28,451 | |
| Subtotal, Services | 105 | 96 | 32,118 | 115 | 115 | 33,573 | 115 | 115 | 33,015 | |
| National Voluntary Laboratory Accreditation Program | 20 | 19 | 3,834 | 22 | 22 | 4,050 | 22 | 22 | 4,050 | |
| Standard reference materials (SRMs): | | | | | | | | | | |
| SRM Sales: | | | | | | | | | | |
| Federal government | 1 | 1 | 264 | 1 | 1 | 232 | 1 | 1 | 232 | |
| Public and non-federal government | 87 | 79 | 22,199 | 95 | 95 | 19,550 | 95 | 95 | 19,493 | |
| Subtotal, SRM sales | 88 | 80 | 22,463 | 96 | 96 | 19,782 | 96 | 96 | 19,725 | |
| SRM investment adjustment | 0 | 0 | (1,489) | 0 | 0 | 0 | 0 | 0 | 0 | |
| Subtotal, SRM | 88 | 80 | 20,974 | 96 | 96 | 19,782 | 96 | 96 | 19,725 | |
| Total, Reimbursable program | 618 | 561 | 169,661 [3/] | 674 | 674 | 165,337 [3/] | 674 | 674 | 160,200 | |
| WCF Investments and Operating Adjustments | | | | | | | | | | |
| WCF investments | 0 | 0 | 14,508 | 0 | 0 | 35,704 | 0 | 0 | 35,704 | |
| WCF operating adjustments | 0 | 0 | 19,474 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Total, WCF Investments and operating adjustments | 0 | 0 | 33,982 | 0 | 0 | 35,704 | 0 | 0 | 35,704 | |
| Total, NIST program | 3,546 | 3,194 | 1,310,954 | 3,769 | 3,609 | 2,171,601 | 3,895 | 3,729 | 1,829,372 | |
| Offsetting adjustment for amortization of equipment | 0 | 0 | (18,384) | 0 | 0 | (14,644) | 0 | 0 | (35,704) | |
| Adjusted total, NIST program | 3,546 | 3,194 | 1,292,570 | 3,769 | 3,609 | 2,156,957 | 3,895 | 3,729 | 1,793,668 | |

[1/] For comparison reason, mandatory funding, such as NIST PSCRF, American Rescue Plan (ARP), and Creating Helpful Incentives to Produce Semiconductors (CHIPS) are not included.

[2/] Most NIST scientists and engineers are not engaged solely on one research project. Individuals may divide their time between two or more projects financed by different sources of support. Also, salary costs of many staff members are charged to an overhead account and subsequently prorated to all directly funded projects. For these reasons, it is not possible to report employment directly for any source of financing. The Permanent Positions above are statistically-derived numbers, based on the estimated work years distribution for NIST programs.

[3/] Total reimbursable numbers are different from the next section due to inclusion of CRF reimbursable obligations.

**Department of Commerce**
**National Institute of Standards and Technology**
**PERIODICALS, PAMPHLETS, AND AUDIOVUSUAL PRODUCTS**
(Obligations in thousands of dollars)

| | 2022 Enacted | 2023 President's Budget | 2024 Estimate |
|---|---|---|---|
| Periodicals | 0.0 | 0.0 | 0.0 |
| Pamphlets | $10.0 | $10.0 | $10.0 |
| Audiovisuals | 235.0 | 174.0 | 174.0 |
| Total | $245.0 | $184.0 | $184.0 |

NIST's mission is to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve our quality of life. In order for our efforts to stimulate innovation, foster industrial competitiveness, and improve the quality of life, we need to broadly disseminate our work. NIST mainly accomplishes this through its primary public web site, www.nist.gov, and other subsidiary sites. We also produce collateral and AV materials, almost all of which direct individuals back to the www.nist.gov resource for additional information.

NIST's one periodical, *The Journal of Research of the National Institute of Standards and Technology*, ceased publication during 2022.

NIST produces a small number of printed products to be distributed at conferences where NIST exhibits. These products include postcards with images and a link on the back to the NIST website, a two-sided periodic table with more information about NIST science, and metric conversion cards.

NIST's audiovisual products are primarily short (under 5 minutes) videos and animations created to highlight NIST's discoveries, science, people and/or history. The use of video in science communications is becoming increasingly popular as a way to effectively convey complex information and make it more engaging and accessible to a wider audience. These products are mainly distributed via the NIST website, YouTube and other social media channels and shared at conferences where NIST is exhibiting. Video content is the preferred medium of communication for audiences across various demographics. In FY 2022, audiovisual costs were higher because, in addition to producing 28 projects, we produced a 21-minute long documentary about a pivotal moment in NIST's history. This piece will be shared first with internal audiences in FY 2023 and will be shared with the wider general public at either the end of FY 2023 or in FY 2024. In the past year, the cost of video gear and contracts has increased, but the spending on video production is a vital investment because it enhances the reach and visibility of our work.

**Department of Commerce**
**National Institute of Standards and Technology**
**AVERAGE SALARY AND BENEFITS**

| | 2022 Actual | 2023 Enacted | 2024 Estimate |
|---|---|---|---|
| Average ES | $294,923 | $308,490 | $324,531 |
| Average scientific and professional | 272,556 | 285,094 | 299,919 |
| Average career path | 181,036 | 189,364 | 199,211 |
| Average ungraded positions | 96,067 | 100,486 | 105,711 |

FY 2023 average salaries reflect a 4.6 percent pay raise and FY 2024 average salaries reflect a 5.2 percent pay raise. Benefits rate of 35% is used per the OPM rate assumption.

**Department of Commerce**
**National Institute of Standards and Technology**
**IMPLEMENTATION STATUS OF GAO AND OIG RECOMMENDATIONS**

31 U.S.C. 720, as amended January 3, 2019, requires the head of a federal agency to submit a written statement of the actions taken or planned on Government Accountability Office (GAO) recommendations to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 180 calendar days after the date of the report.

The Good Accounting Obligation in Government Act (GAO-IG Act), passed on January 3, 2019, (P.L. 115-414) requires each agency to include, in its annual budget justification, a report that identifies each public recommendation issued by GAO and the agency's office of the inspector general (OIG) which has remained unimplemented for one year or more from the annual budget justification submission date. In addition, the Act requires a reconciliation between the agency records and the IGs' Semiannual Report to Congress.

**Section 1. Recommendations for which action plans were finalized since the last appropriations request.**

| Report Number | Report Title | Issue Date | Recommendation Number | Recommendation | Action(s) Planned | Action Status (Planned, In-Progress, or Complete) | Target Completion Date | Recommendation Status (Planned, In-Progress, or Complete) |
|---|---|---|---|---|---|---|---|---|
| GAO-22-105016 | Earthquakes: Opportunities Exist to Further Assess Risk, Build Resilience, and Communicate Research | 05/04/2022 | 1 | The Director of NIST should, in collaboration with FEMA, NSF, and USGS and in coordination with federal, state, local, territorial, and tribal governments and stakeholders, conduct a national risk assessment to identify the progress made by communities to strengthen earthquake resilience since 2015, and the gaps in resilience that remain. | To the extent that resources are available, NIST, in collaboration with the other NEHRP agencies, will initiate a national risk assessment that identifies the progress made by NEHRP to strengthen earthquake resilience in the nation as well as gaps that remain. | In-progress | 9/2028 | In progress |
| GAO-22- | Earthquakes: Opportunities | 05/04/2022 | 3 | The Director of NIST should, in | NEHRP is committed to obtaining input from all stakeholders | In-progress | 12/2024 | In-progress |

| Report Number | Report Title | Issue Date | Recommendation Number | Recommendation | Action(s) Planned | Action Status (Planned, In-Progress, or Complete) | Target Completion Date | Recommendation Status (Planned, In-Progress, or Complete) |
|---|---|---|---|---|---|---|---|---|
| 105016 | Exist to Further Assess Risk, Build Resilience, and Communicate Research | | | collaboration with FEMA, NSF, and USGS assess and determine if additional actions are needed to obtain input from state, local, territorial, and tribal governments and stakeholders on research priorities that align with community and stakeholder needs. | regarding research needs. NIST, in collaboration with the other NEHRP agencies, will evaluate what additional actions are needed for gathering stakeholder input on research priorities that align with national needs. | | | |
| GAO-22-105016 | Earthquakes: Opportunities Exist to Further Assess Risk, Build Resilience, and Communicate Research | 05/04/2022 | 5 | The Director of NEHRP should, in collaboration with NIST, NSF, USGS, and FEMA, follow leading practices to develop performance measures linked to priority research outcomes, and to track and monitor research to ensure research priorities are being met. | NEHRP submits a biennial report to the Congress that highlights milestones achieved from programmatic efforts that support the NEHRP mission during the reporting period. The updated Strategic Plan was structured to facilitate development of the NEHRP biennial reports so that the Program and its stakeholders can monitor progress towards research priorities more efficiently. As identified in the GAO report (Table 2), NIST, in collaboration with the other NEHRP agencies, will evaluate other methodologies based on leading practices to develop metrics for identified research priorities and a process to track and monitor progress of the cumulative programmatic activities against these metrics. | In-progress | 12/2024 | In-progress |
| GAO-22-105016 | Earthquakes: Opportunities Exist to Further Assess Risk, | 05/04/2022 | 6 | The Director of NEHRP should, in collaboration with NIST, NSF, USGS, and | As identified in the GAO report (Table 2), NIST, in collaboration with the other NEHRP agencies, will create an inventory of available resources to achieve the | In-progress | 12/2024 | In-progress |

| Report Number | Report Title | Issue Date | Recommendation Number | Recommendation | Action(s) Planned | Action Status (Planned, In-Progress, or Complete) | Target Completion Date | Recommendation Status (Planned, In-Progress, or Complete) |
|---|---|---|---|---|---|---|---|---|
| | Build Resilience, and Communicate Research | | | FEMA, follow leading practices to identify and leverage the Program's resources needed to achieve research priority outcomes. | interagency research priorities defined in the updated NEHRP Strategic Plan. This effort may include evaluating other federal programs involved with earthquake risk reduction to understand the full range of government resources available. | | | |
| GAO-22-105016 | Earthquakes: Opportunities Exist to Further Assess Risk, Build Resilience, and Communicate Research | 05/04/2022 | 7 | The Director of NIST should, in collaboration with NSF, document and implement a comprehensive plan to better ensure that all state, local, territorial and tribal governments and stakeholders are aware of the mechanisms and practices used by NSF and NIST for disseminating research. | NIST, in collaboration with NSF, will evaluate what additional actions are needed to better ensure that research findings, including dissemination, are accessible to state, local, territorial, and tribal governments and stakeholders. | In-progress | 12/2024 | In-progress |
| OIG-22-033-A | Performance Audit of the U.S. Department of Commerce's Working Capital Funds | 09/22/2022 | 1 | The NIST WCF update existing policies to ensure that the methodology used to estimate reimbursable agreement amounts is consistently documented and the review of reimbursable agreements considers whether amounts | NIST's Agreements Management Team (AMT) will:<br>1. Develop NIST-wide guidance regarding Service Level Agreements (SLAs) based on the I G Recommendations 1, 2, 3 and 5.<br>2. Communicate the guidance by email to the NIST OU's, and<br>3. Post the guidance on the NIST OAAM/ AMT iNET (internal) website. | Complete | 12/30/2022 | Complete |

| Report Number | Report Title | Issue Date | Recommendation Number | Recommendation | Action(s) Planned | Action Status (Planned, In-Progress, or Complete) | Target Completion Date | Recommendation Status (Planned, In-Progress, or Complete) |
|---|---|---|---|---|---|---|---|---|
| | | | | are supported and explained by documentation. | | | | |
| OIG-22-033-A | Performance Audit of the U.S. Department of Commerce's Working Capital Funds | 09/22/2022 | 2 | The NIST WCF and Departmental WCF develop, document, and implement a policy to require divisions providing services to customers to periodically solicit formal feedback from customer bureaus, document and assess the feedback received. | Please see Recommendation 1, above. | Complete | 12/30/2022 | Complete |
| OIG-22-033-A | Performance Audit of the U.S. Department of Commerce's Working Capital Funds | 09/22/2022 | 3 | The NIST WCF coordinate with customers to define a reasonable timeline to communicate estimated reimbursable agreement amounts for recurring agreements; and develop, document, and implement a policy related to the timing of communication of estimated agreement amounts. | Please see Recommendation 1, above. | Complete | 12/30/2022 | Complete |
| OIG-22- | Performance | 09/22/ | 4 | The NIST WCF | This recommendation is | Complete | 11/10/2022 | Complete |

| Report Number | Report Title | Issue Date | Recommendation Number | Recommendation | Action(s) Planned | Action Status (Planned, In-Progress, or Complete) | Target Completion Date | Recommendation Status (Planned, In-Progress, or Complete) |
|---|---|---|---|---|---|---|---|---|
| 033-A | Audit of the U.S. Department of Commerce's Working Capital Funds | 2022 | | coordinate with customers to define a reasonable timeline for the true-up and closeout of customer agreements; and develop, document, and implement a policy defining the timeline surrounding the true-up and closeout process. | addressed through a corrective action on a separate OIG audit of NIST's WCF, Audit of National Institute of Standards and Technology Working Capital Fund for Fiscal Year Ended September 30, 2019, Final Report No. OIG-21-024-A, May 3, 2021. To address Finding 1, Recommendation 1 on that audit, NIST committed to developing an automated tool to track its agreements. The Finance Agreements Group announced the launch of its new Service Now Agreements Tool on November 10, 2022. (See attached email notification dated 11/10/22, from NIST's Finance Agreements Group Leader to all administrative staff.)<br><br>The Service Now Agreements Tool allows for more effective oversight and management of agreements for the duration of their lifecycle by automating many activities. Critical timelines for true-up and closeout are hardcoded in the tool to ensure compliance with all relevant policies and procedures and consistent application. Staff must process all agreements in the tool. The tool sends automated notifications and reminders based on user role & responsibility. Furthermore, the Agreements Tool is interfaced with CBS (the interface performs daily updates) that allows staff to view all important agreement information, including real-time financial data, in one place. For example, the tool will send automated | | | |

| Report Number | Report Title | Issue Date | Recommendation Number | Recommendation | Action(s) Planned | Action Status (Planned, In-Progress, or Complete) | Target Completion Date | Recommendation Status (Planned, In-Progress, or Complete) |
|---|---|---|---|---|---|---|---|---|
| | | | | | notifications to Operating Unit administrative staff notifying them when an agreement is about to expire. Administrative staff can review financial data to true-up final costs and prepare the agreement for closeout. Once completed, the tool automatically notifies Finance Agreement Group staff that the agreement is ready for closeout. The implementation of the Service Now Agreements Tool satisfies the requirements of this recommendation. | | | |
| OIG-22-033-A | Performance Audit of the U.S. Department of Commerce's Working Capital Funds | 09/22/2022 | 5 | The NIST WCF develop and implement monitoring procedures to ensure that documentation used to support the determination of the indirect cost rate is completed and maintained in accordance with NIST PR 4000.01. | Please see Recommendation 1, above. | Complete | 12/30/2022 | Complete |

**Section 2. Implementation of GAO public recommendations issued no less than one year ago that are designated by GAO as 'Open' or 'Closed-Unimplemented.'**

Open Recommendation(s) the Department has decided not to implement.

| | |
|---|---|
| Report Number | None |
| Report Title | |
| Issue Date | |
| Recommendation Number | |
| Recommendation | |
| Reason for the Decision not to Implement | |

Open Recommendation(s) the Department plans to implement.

| Report Number | Report Title | Issue Date | Recommendation Number | Recommendation | Target Implementation Date | Closure Request Pending with GAO (Yes/No) | Clear Budget Implications (Yes/No) |
|---|---|---|---|---|---|---|---|
| GAO-17-3 | Climate Change: Improved Federal Coordination Could Facilitate Use of Forward-Looking Climate Information in Design Standards, Building Codes, and Certifications | 11/30/2016 | 1 | To help reduce Federal fiscal exposure by enhancing the resilience of infrastructure to extreme weather, we recommend that the Secretary of Commerce, through the Director of the National Institute of Standards and Technology (NIST), in consultation with the Mitigation Framework Leadership Group (MitFLG) and the United States Global Change Research Program (USGCRP), convene Federal agencies for an ongoing governmentwide effort to provide the best available forward-looking climate information to standards-developing organizations for their consideration in the development of design standards, building codes, and voluntary certifications. | June 2023 | No | |
| GAO-18-327 | Federal Research: Additional Actions Needed to Improve Licensing of Patent Laboratory Inventions | 6/19/2018 | 1 | The Secretary of Commerce should instruct NIST to fully report the range of challenges in federal patent licensing, such as those outlined in this report, by, for example, leveraging its survey of practices at federal technology transfer offices, past FLC studies, and agency reports and including that information in its summary reports to Congress. | Completed October 2019 | Yes | |
| GAO-18- | Federal Research: | 6/19/2018 | 2 | The Secretary of Commerce should instruct | March 2023 | No | |

| Report Number | Report Title | Issue Date | Recommendation Number | Recommendation | Target Implementation Date | Closure Request Pending with GAO (Yes/No) | Clear Budget Implications (Yes/No) |
|---|---|---|---|---|---|---|---|
| 327 | Additional Actions Needed to Improve Licensing of Patent Laboratory Inventions | | | NIST to clarify the link between establishing patent license financial terms and the goal of promoting commercial use, through appropriate means, such as the upcoming rule-making process and updating relevant guidance. | | | |
| GAO-18-656 | Science and Technology: Considerations for Maintaining U.S. Competitiveness in Quantum Computing, Synthetic Biology, and Other Potentially Transformational Research Areas | 9/26/2018 | 2 | As the QIS Subcommittee moves forward, the Department of Commerce co-chair, in coordination with other co-chairs and participating agency officials, should take steps to fully implement leading practices that enhance and sustain collaboration. | Completed November 2019 | Yes | |
| 19-409 | Advanced Manufacturing: Innovation Institutes Have Demonstrated Initial Accomplishments, but Challenges Remain in Measuring Performance and Ensuring Sustainability | 5/23/2019 | 1 | The Secretary of Commerce should direct the NIST Director to work with other sponsoring federal agencies to develop and implement network-wide performance goals for the Manufacturing USA program with measurable targets and time frames. | Completed January 2021 | Yes | |
| 19-409 | Advanced Manufacturing: Innovation Institutes Have Demonstrated Initial Accomplishments, but Challenges Remain in Measuring | 5/23/2019 | 2 | The Secretary of Commerce should direct the NIST Director to work with other sponsoring federal agencies to ensure that the Manufacturing USA network-wide performance measures are directly aligned with the network-wide performance goals, the Manufacturing USA strategic objectives and program goals, and the statutory purposes of the RAMI Act. | Completed January 2021 | Yes | |

| Report Number | Report Title | Issue Date | Recommendation Number | Recommendation | Target Implementation Date | Closure Request Pending with GAO (Yes/No) | Clear Budget Implications (Yes/No) |
|---|---|---|---|---|---|---|---|
| | Performance and Ensuring Sustainability | | | | | | |
| GAO-20-81 | Federal Research: Additional Actions Needed to Improve Publish Access to Research Results | 11/21/2019 | 31 | The National Institute of Standards and Technology Director should fully develop and implement a mechanism to ensure researcher compliance with the public access plan and associated requirements. | September 2023 | No | |

Recommendations designated by GAO as "Closed-Unimplemented for the past 5 years (2015-2019). Future reports will cover a one-year period.

| | |
|---|---|
| Report Number | None |
| Report Title | |
| Issue Date | |
| Recommendation Number | |
| Recommendation | |
| Reason Not Implemented | |

## Section 3. Implementation of OIG public recommendations issued no less than one year for which Final Action has not been Taken or Action Not Recommended has been Taken

| Report Number | Report Title | Issue Date | Recommendation Number | Recommendation | Target Implementation Date | Reason no Final Action Taken or Action Not recommended taken | Closure Request Pending (Yes/No) |
|---|---|---|---|---|---|---|---|
| OIG-21-024-A | Audit of National Institute of Standards and Technology Working Capital Fund For Fiscal Year Ended September 30, 2019 | 5/3/2021 | 5 | Develop and document for Fund Code 98 formal policies and procedures that describe roles and responsibilities by component for the process of tracking and billing costs, recording advances, the carryover process and tracking and monitoring the period of performance on an order when applicable. | September 2023 | Action in process. | No |

## Section 4. Discrepancies between this report and the semiannual reports submitted by the Commerce Office of Inspector General or reports submitted by the GAO.

| | |
|---|---|
| Report Number | None |
| Report Title | |
| Issue Date | |
| Recommendation Number | |
| Recommendation | |
| Discrepancy | |
| Reason for Discrepancy | |

**Department of Commerce**
**National Institute of Standards and Technology**
**Description of Tribal Consultations**

N/A – NIST does not believe Exhibit 42 pertaining to tribal consultations to be applicable to the agency.

# U.S. DEPARTMENT OF COMMERCE

## FY 2024 Annual Performance Plan

## FY 2022 Annual Performance Report

NIST-221

## Overview of Bureau Accomplishments

Manufacturing:
NIST is working with industry and universities to develop essential measurement capabilities and forge precompetitive research collaborations that help U.S. manufacturers overcome shared technical obstacles. As the field of additive manufacturing matures, transitioning what is now more of an art into a science depends on measurements and standards. In June of 2022, a first of kind standard, ASME Y14.46, identifying important geometric dimensioning and tolerancing parameters for additive manufacturing was published. This standard was possible due to NIST research. In December 2020, NIST awarded nearly four million dollars in grants to the Georgia Tech Research Corporation, University of Texas at El Paso, Purdue University, and Northeastern University to help accelerate the adoption of new measurement methods and standards in metals-based additive manufacturing (MBAM). In June 2021, NIST awarded an additional four million dollars to American Bureau of Shipping, Texas A&M University, and University of Wisconsin-Madison. In November 2021, NIST announced a Notice of Funding Opportunity, with an expected total award of four million dollars, to further accelerate the adoption of MBAM. This small subset of recent accomplishments is representative of the diverse nature of scientific needs satisfied by NIST laboratory programs. Many more interesting accomplishments and industry impacts can be found at: https://www.nist.gov/director/pao.
The Hollings Manufacturing Extension Partnership Program (MEP) helped their clients to create and retain over 125,746 jobs, recognize $1.5 billion in cost savings, generate $14.4 billion in new and retained sales, and make investments of $5.2 million in their companies. Full MEP Program accomplishments and industry impact for the program can be found here.
NIST has awarded nearly $54 million in grants for 13 high-impact projects for research, development and testbeds for pandemic response. The funding, which was provided by the American Rescue Act, will support projects at eight manufacturing innovation institutes in the Manufacturing USA® network, working with more 80 partners including leading research universities, nonprofits, and small and large manufacturers.
NIST's Advanced Manufacturing Technology Roadmap Program (MfgTech) awarded $3.9 million to 13 organizations to develop technology roadmaps for promising advanced manufacturing clusters and establish new or strengthen existing industry-driven consortia that address high-priority research challenges to grow advanced manufacturing in the United States.
Critical and Emerging Technologies:
*Quantum Information Science*: In February 2022, researchers at JILA, a joint institute of NIST and the University of Colorado Boulder, published the results that measured Albert Einstein's theory of general relativity, or more specifically, the effect called time dilation, at the smallest scale ever, showing that two tiny atomic clocks, separated by just a millimeter or the width of a sharp pencil tip, tick at different rates. This work suggests how to make atomic clocks 50 times more precise than today's best designs and offers a route to perhaps revealing how relativity and gravity interact with quantum mechanics, a major quandary in physics. In a related effort, researchers at JILA and nearby NIST Boulder campus published work on comparison of three clocks based on different atoms, and the first to link the most advanced atomic clocks in different locations over the air. These atomic clock comparisons place the scientific community one step closer to meeting the guidelines for redefinition of the second.
*Artificial Intelligence (AI)*: NIST contributes to the research, standards and data required to realize the full promise of artificial intelligence (AI) as a tool that will enable American innovation, enhance economic security and improve our quality of life. Through an open and transparent process, NIST is developing the AI Risk Management Framework to help manage risks associated with AI to individuals, organizations, and society. In March 2022, NIST released for public comment the first draft of the framework and has engaged stakeholders via two public workshops. In March 2022, NIST also released a report on identifying and managing bias in AI throughout the lifecycle of an AI process. NIST, on behalf of the Commerce Department, assembled the National AI Advisory Committee (NAIAC), a group of experts tasked with advising the President and the National AI

Initiative Office on topics related to AI which first convened in May 2022. With NIST's leadership, in 2021 the Interagency Standards Policy Committee established a new AI subcommittee to bring together standards executives and practitioners from across government to discuss challenges and opportunities in AI standardization. NIST has also engaged actively with international AI efforts in the US-EU Trade and Technology Council (TTC) and the Quad. The U.S. (led by NIST, NSF, and OSTP) and UK are collaborating on prize challenges, focused on advancing privacy-enhancing technologies to facilitate secure and privacy-protective data access and analytics. NIST laboratories continue to make progress exploiting AI to advance measurement science in areas such as advanced communications, manufacturing robotics, and materials science.

*Bioscience*: NIST's research focuses on materials, measurements, and data to improve critical metrology needs in the biological sciences. A new Standard Reference Material (SRM), released in November 2021, is designed to make accurate quantitative measurements of glycans, molecules typically attached to proteins that can influence protein structure and function. This material will help meet the needs of biomanufacturing companies, including more accurate assessments of the consistency of their biomanufacturing processes. Another SRM, released in April 2022, contains 13 genetic markers (known DNA sequences) that can be used to identify a water pollution source or estimate the concentration of fecal pollution in a water sample. This material will be used to help standardize the use of recreational water quality monitoring methods across the nation and to develop a tool that can be used to establish method performance metrics for determining potential public health risks from contaminated water sources. In July 2022, NIST produced a material to help commercial laboratories ensure the accuracy of tests for monkeypox. Given the urgent public health need, NIST is making the material freely available to any test manufacturer or testing laboratory worldwide.

*Advanced Communications*: NIST is helping to build the measurement infrastructures that will be crucial for developing future wireless systems, including Fifth Generation (5G) and beyond cellular systems, by developing new measurement methods, analysis, and tools for generating high-fidelity data. Recently, NIST expanded its suite of state-of-the-art testbeds to include a new 5G Coexistence Testbed that provides Federal agencies, academia, and industry with access to the newest generation of end-to-end 5G New Radio (NR) mm-Wave technology. In April 2021, NIST entered a new public-private partnership with the National Science Foundation (NSF), industry, federal agencies, and the research community to accelerate research on Resilient and Intelligent Next-Generation Systems (RINGS). The RINGS program will bring $40 million in funding to multidisciplinary collaborative projects for emerging Next Generation wireless communications. As part of its work to support the development of measurement-based approaches for authenticating 5G hardware, NIST released Special Publication 1278, "5G Hardware Supply Chain Security Through Physical Measurements," in May 2022, and also held the virtual *Securing the 5G Supply Chain Workshop* May 18-19, 2021. Feedback from this workshop will inform a NIST special report on strategic planning, guide new research, and foster interagency and industrial partnerships.

Cybersecurity:
NIST has delivered on its many responsibilities under the President's Executive Order on Improving the Nation's Cybersecurity (14028) to help enhance software supply chain security, engaging with stakeholders through multiple workshops and calls for papers. NIST released software supply chain security and integrity resources, including an updated Secure Software Development Framework, labeling criteria for consumer software and internet of things (IoT) device security, and updated supply chain security risk management guidance. Announced at a White House Cybersecurity Summit, NIST launched its National Initiative to Improve Cybersecurity in Supply Chains (NIICS), focused on the development and management of hardware and services throughout the supply chain. In February 2022, NIST initiated a request for information on the NIICS and its widely-used NIST Cybersecurity Framework to address the changing cybersecurity risk landscape. NIST has kicked off the process to update the Cybersecurity Framework to version 2.0 in consultation with stakeholders. At the National Cybersecurity Center of Excellence (NCCoE), NIST has undertaken practical cybersecurity guides in collaboration with industry in 5G, distributed energy resources, and held multiple public workshops on cybersecurity for genomic data. NIST's *Privacy Workforce Public Working Group* has brought practitioners together to address the need for skilled privacy professionals to develop workforce resources aligned with the NIST Privacy Framework, modeled after the popular Cybersecurity

Framework, and the NIST *National Initiative for Cybersecurity Education (NICE) Workforce Framework for Cybersecurity*. The NICE program has continued to convene and build a community dedicated to advancing the cybersecurity workforce, including developing and maintaining critical tools like the Workforce Framework and career pathfinders.

**Planned Actions through FY 2024**

NIST has made significant progress on all of its strategies over the past year. NIST will continue to support the National Science and Technology Council (NSTC), Committee on Technology, Subcommittee on Advanced Manufacturing, and the Office of Science and Technology Policy (OSTP) in development and implementation of the National Strategic Plan for Advanced Manufacturing. NIST will also continue its work in strengthening supply chain resiliency through MEP's supply chain programs and NIST's research programs.
NIST will continue to coordinate U.S. engagement in key emerging areas. Working with federal agencies and other stakeholders, NIST will implement the recommendations in the NIST Plan for Federal Engagement in Developing Technical Standards and Related Tools for AI, developed in response to Executive Order 13859, including the appointment of NIST as the AI standards coordinator for federal agencies. NIST chairs the Interagency Committee on Standards Policy, and NIST will continue to ensure that the U.S. is influential in critical emerging areas. For example, in quantum science standardization NIST will leverage our private sector partners via the Quantum Economic Development Consortium (QED-C). NIST will also continue to coordinate cybersecurity standards needs among the Interagency International Cybersecurity Standards Working Group and its member agencies.
NIST will also focus on implementing the CHIPS and Science Act to help revitalize the U.S. domestic manufacturing economy, spur research and development in critical semiconductor industry, and secure U.S. supply chains for critical sectors.

**Analysis of Performance Indicators**
To ensure performance indicators are aligned with national needs, NIST continually collects information on major national issues, shifting trends in science and technology, and the performance of internal operational processes through a variety of mechanisms including internal and external evaluations, workshops, industry outreach, external advisory boards, and annual reviews of its programs. This input is viewed in the context of the NIST mission to make decisions on where NIST needs to develop specific capabilities and capabilities, how to best manage existing resources to address current issues, and how to continually optimize the organization for improved performance.

To track progress, NIST works with its standing advisory bodies, including the Visiting Committee on Advanced Technology and other program-specific advisory committees. NIST labs undergo periodic assessments by the National Academies of Sciences, Engineering, and Medicine (NASEM) to ensure NIST is addressing the nation's most pressing issues and with the highest-quality work.

**Explanation of Trends**

NIST's performance indicators track two types of metrics: impact factors and the willingness of industry to partner or co-invest with NIST. Performance indicators focused on impact track how NIST research benefits the development of new products and services, and the extent to which it produces relevant scientific and technical publications. Indicators that are focused on partnerships and co-investment, demonstrate the value that NIST brings to its partners.

Despite the pandemic NIST continues to meet and exceed it performance targets. One significant setback was an incident at the NIST Center for Neutron Research (NCNR) in which a fuel element in the research reactor was damaged. NCNR remained shut down since February 3, 2021. This

greatly affects some performance indicators, such as “Number of businesses using NIST research facilities”, although NIST continues to meet its targets.

**Explanation of Targets for FY 23 and FY 24**
NIST continues to prioritize and expand research in the areas relevant to AI, advanced manufacturing, advanced communications, bioscience, cybersecurity and privacy, and quantum science. Despite the continued operational challenges, NIST proposed increases to its performance measures for FY 2023 and 2024 to reflect its commitment to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve our quality of life.

**Progression of the Performance Indicators**

Performance indicators rely on the information that is tracked by specific units within NIST. This information is used for accounting and reporting purposes and in most cases has designated staff who are responsible for collecting, ensuring accuracy, and monitoring the data. The data serves as an indicator of the overall performance and ‘health’ of the designated function.

**Performance Data Validation and Verification**

NIST uses established processes to ensure accuracy and reliability of the data used to measure progress toward achieving the SOs. The data is collected and retained in databases, which are maintained at the individual unit level. To automate and streamline the collection of this data, NIST could benefit by additional resources to incorporate Robotic Process Automation into regular workflows.

**Performance Indicators**

| Strategic Objective | Class | Indicators | FY 2022 Target | FY 2022 Actual | FY 2022 Status | FY 2023 Target | FY 2024 Target |
|---|---|---|---|---|---|---|---|
| 1.1 | Proposed new | Value of advanced manufacturing technology portfolio within Commerce-sponsored Manufacturing USA Institutes | $52.00 M | $135.10 M | Exceeded | $60.00 M | $140.00 M |
| 1.1 | Proposed new | Number of small and medium manufacturers who receive technical assistance to increase contributions of additional key products and critical technologies in the domestic supply base | 250 | 465 | Exceeded | 479 | 493 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1.2 | Current/ Recurring | International Adoption of NIST Quantum SI Standards | 10 | 20 | Exceeded | 15 | 35 |
| 1.2 | Current/ Recurring | Relative citation impact of NIST - authored publications | 1.30 | 1.57 | Exceeded | 1.40 | 1.40 |
| 1.2 | Current/ Recurring | Number of businesses using NIST research facilities | 300 | 525 | Exceeded | 350 | 400 |
| 1.2 | Proposed new | Number of U.S. Government staff trained to effectively coordinate, participate, and influence technical standards development | 300 | 1,050 | Exceeded | 400 | 600 |
| 1.2 | Proposed new | Number of participants at outreach events, hosted by NIST to identify opportunities for engagement and influence in critical and emerging technology standards development | 200 | 280 | Exceeded | 300 | 500 |
| 1.6 | Current/ Recurring | Number of companies and organizations exposed to National Cybersecurity Center of Excellence (NCCoE) produced cybersecurity guides and other products | 13,500 | 14,343 | Exceeded | 15,000 | 17,000 |
| 1.6 | Current/ Recurring | Number of resources derived from the cybersecurity framework | 185 | 189 | Exceeded | 190 | 150 |
| 1.6 | Current/ Recurring | Cumulative number of collaborators on NCCoE projects | 340 | 513 | Exceeded | 440 | 525 |
| 2.3 | Proposed new | Growth in workforce services provided to small to midsized U.S. manufacturers | 50 | 2,400 | Exceeded | 2,472 | 2,546 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2.3 | Proposed new | Growth in technology services provided to small to midsized U.S. manufacturers | 2,000 | 1,600 | Not Met | 1,648 | 1,698 |
| 2.3 | Proposed new | Growth in number of small to midsized manufacturers participating in MEP knowledge sharing events | 400 | 2,590 | Exceeded | 2,668 | 2,748 |

| | Exceeded | | Met | | Not Met |
|---|---|---|---|---|---|

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**DEPARTMENT OF COMMERCE**
**National Technical Information Service**
**NTIS Revolving Fund**
**Budget Estimates, Fiscal Year 2024**
**Congressional Submission**
Table of Contents

## Table of Contents

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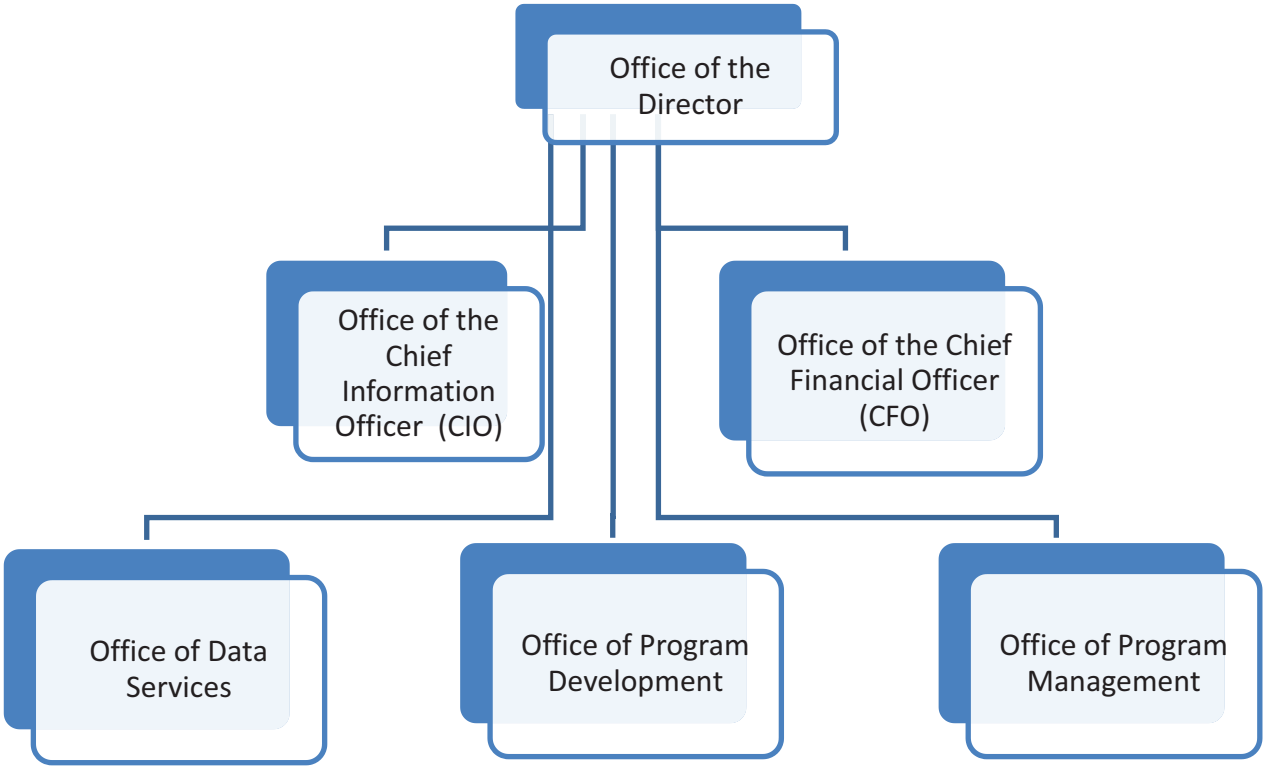
# U.S Department of Commerce
# National Technical Information Service



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**Department of Commerce**
**National Technical Information Service**
**NTIS Revolving Fund**
**Budget Estimates, Fiscal Year 2024**

Executive Summary

National Technical Information Service (NTIS) supports the entire data delivery pipeline for creating unique platforms to access, analyze, and use data; combining data in new ways to enable innovative products and services; and delivering better data services to businesses, communities, and citizens. NTIS provides services using modern data science, engineering, and best practices which are essential to rapidly executing projects requiring high levels of innovation and creativity. NTIS is a self-supporting agency without federal discretionary appropriations and recovers its operating costs from fees and the use of its Public Enterprise Revolving Fund.

NTIS provides data services within four key elements:

- Data Discovery and Usability (e.g., data cataloging and inventories, data capture and storage, search engine optimization, interactive query management, customer analytics, user experience design of data portals, usability testing, user analytics).
- Data Interoperability and Standards (e.g., user interfaces for data portals, data cleansing and standards, metadata practices, developer platforms with suite of application program interface tools).
- Data Analytics and Forecasting (e.g., comparative/predictive data analytics, forecasting, statistical methods, computer science and machine learning methods, geospatial analysis, data visualization).
- Data Infrastructure and Security (e.g., data delivery services for access anytime, anywhere; enterprise data management; data delivery business models; software development life cycle; cybersecurity; cloud-based data solutions; assistive technologies; data collection services).

NTIS leverages its unique capabilities and authorities to partner with the private sector to rapidly execute projects requiring the use of modern data science, engineering, and best practices. Critical to success of these projects is the ability to use advanced software development processes, specifically:

- Agile and collaborative development process to support frequent software releases and risk reduction;
- DevOps process to tightly integrate software development with quality assurance, deployment, and operations while also supporting frequent releases and risk reduction; and,
- Life cycle approach to software development (plan, code, build, test, release, deploy, and operate).

NTIS services include a permanent repository and clearinghouse for scientific, technical, engineering, and business information which includes more than three million publications covering more than 350 subject areas. Today, NTIS receives federal agency reports electronically, attaches robust metadata to these reports and ensures that the documents remain available to the public even if individual agencies remove them from their websites. NTIS's online database also presents this metadata and the full text of reports in a form that enables access across the internet. As a result, scientists, engineers, and other customers looking for federal reports and data get much better results from the search engines than would be possible without NTIS efforts. In addition, NTIS is often the only current source for many reports issued prior to 1995. NTIS received these reports from federal agencies in paper copy and has archived them on microfiche. A Government Accountability Office report (GAO-14-781T) dated July 23, 2014, found that in some subject areas up to 45 percent of the collection of three million publications on more than 350 subjects is exclusively available from NTIS.

As technology has evolved, projects related to online data and services have generated an increasing share of the agency's operating revenues. NTIS strongly supports the Department's commitment to make data easier for business, government, taxpayers, and communities to access, analyze, and use federal data assets. NTIS will evolve, and its service portfolio will continue to grow by supporting the entire data delivery pipeline with a focus on increasing access to data, combining data in new value-added ways, and delivering improved services and products.

Department of Commerce
National Technical Information Service
NTIS Revolving Fund
SUMMARY OF RESOURCE REQUIREMENTS
(Dollar amounts in thousands)

| | Positions | FTE | Budget Authority | Direct Obligations |
|---|---|---|---|---|
| Appropriation Available, 2023 | 0 | 0 | 0 | 0 |
| Plus 2024 Adjustments to Base | 0 | 0 | 0 | 0 |
| Less: Obligations from prior years | 0 | 0 | 0 | 0 |
| 2024 Base | 0 | 0 | 0 | 0 |
| Plus 2024 program changes | 0 | 0 | 0 | 0 |
| 2024 Estimate | 0 | 0 | 0 | 0 |

| | | 2022 Actual | | 2023 Enacted | | 2024 Base | | 2024 Estimate | | Increase/Decrease over 2024 Base | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Comparison by activity/subactivity:** | | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| National Technical Information Service | | | | | | | | | | | |
| Organization, Preservation and Public | Pos./BA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Access to Technical Information | FTE/Obl. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | Pos./BA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | FTE/Obl. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Adjustments for: | | | | | | | | | | | |
| Recoveries | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Unobligated balance, start of year | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Unobligated balance transferred | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Unobligated balance, end of year | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Unobligated balance expiring | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Financing from transfers: | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Transfer from other accounts (-) | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Transfer to other accounts (+) | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Appropriation | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Department of Commerce**
**National Technical Information Service**
**NTIS Revolving Fund**
**SUMMARY OF REIMBURSABLE OBLIGATIONS**
(Dollar amounts in thousands)

Activity: Information Clearinghouse Program

| Line Item | | 2022 Actual | | 2023 Enacted | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| National Technical Information Service: | Pos/Approp | 43 | 0 | 43 | 0 | 43 | 0 | 43 | 0 | 0 | 0 |
| Information Clearinghouse Program | FTE/Obl. | 33 | $63,398 | 43 | $100,000 | 43 | $100,000 | 43 | $100,000 | 0 | 0 |
| **Total** | Pos/Approp | 43 | 0 | 43 | 0 | 43 | 0 | 43 | 0 | 0 | 0 |
| | FTE/Obl. | 33 | 63,398 | 43 | 100,000 | 43 | 100,000 | 43 | 100,000 | 0 | 0 |

Exhibit 7

Department of Commerce
National Technical Information Service
NTIS Revolving Fund
SUMMARY OF FINANCING
(Dollar amounts in thousands)

| | 2022 Actual | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/ Decrease/ from 2024 Base |
|---|---|---|---|---|---|
| Total Obligations | $ 63,398 | $ 100,000 | $ 100,000 | $ 100,000 | 0 |
| Offsetting collections from: | | | | | |
| Federal funds | (52,723) | (95,000) | (95,000) | (95,000) | 0 |
| Trust funds | 0 | 0 | 0 | 0 | 0 |
| Non-Federal sources | (1,804) | (5,000) | (5,000) | (5,000) | 0 |
| Recoveries | 0 | 0 | 0 | 0 | 0 |
| Unobligated balance, start of year | (23,243) | (25,159) | (25,159) | (25,159) | 0 |
| Unobligated balance transferred | 0 | 0 | 0 | 0 | 0 |
| Unobligated balance, end of year | 25,159 | 25,159 | 25,159 | 25,159 | 0 |
| Unobligated balance expiring | 0 | 0 | 0 | 0 | 0 |
| Budget Authority | 0 | 0 | 0 | 0 | 0 |
| Financing: | | | | | |
| Transfer from other accounts (-) | 0 | 0 | 0 | 0 | 0 |
| Transfer to other accounts (+) | 0 | 0 | 0 | 0 | 0 |
| Appropriation | 0 | 0 | 0 | 0 | 0 |

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**Department of Commerce**
**National Technical Information Service NTIS Revolving Fund**
**NTIS Revolving Fund**
**JUSTIFICATION OF PROGRAM AND PERFORMANCE**
(Dollar amounts in thousands)

Activity: National Technical Information Service

## Goal Statement

The National Technical Information Service (NTIS) promotes the data priorities of the Department of Commerce (DOC) and other federal agencies, including open access, open data, providing information and data services to the public, industry, and other federal agencies in ways that enable American innovation and economic growth. NTIS serves as a center of excellence that delivers trusted data networks through agile partnerships with the private sector which enable new and improved data products and services.

## Base Program

NTIS' basic authority is to operate a permanent clearinghouse of scientific and technical information, codified as chapter 23 of Title 15 of the United States Code (15 U.S.C. 1151-1157). This chapter also established NTIS' authority to charge fees for its products and services and to recover all costs through such fees "to the extent feasible".

## Statement of Operating Objectives

All activities are funded through the NTIS Revolving Fund, without direct appropriation. NTIS' objectives are to (a) create unique data platforms that make it easier for the public, industry, and other federal agencies to access, analyze, and use data; (b) combine data in new ways to enable the delivery of innovative products and services; and (c) deliver better data services to businesses, communities, and citizens. These objectives are focused on supporting Department and federal data priorities, including open access and open data. This work requires collaborating with federal agencies, partnering with the private sector, delivering modern information and data services, and disseminating federally funded scientific, technical, and related information. NTIS will meet its objectives in the most cost-effective and efficient manner possible while ensuring strong governance and stewardship of its unique mission and authorities.

NTIS released the Public Access National Technical Reports Library on October 1, 2016, permitting the American public free access to the electronic scientific and technical reports in its repository, which collects and catalogues approximately 30,000 scientific and technical reports annually that are added to its permanent collection.

## Explanation and Justification

NTIS continues to make substantial progress in improving its service to the public by establishing and maintaining data programs that assist other federal agencies in effectively disseminating information to the American public. A representative set of national data programs that NTIS will continue to provide to the American public includes NTIS Database and the Social Security Administration Limited Access Death Master File.

| **Line Item** | | 2022 Actual | | 2023 Enacted | | 2024 Estimate | |
|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| NTIS Revolving Fund | Pos./BA | 43 | | 43 | | 43 | |
| | FTE/Obl | 33 | $ 63,398 | 43 | $100,000 | 43 | $100,000 |

**Department of Commerce**
**National Technical Information Service**
**NTIS Revolving Fund - Reimbursable Obligations**
**SUMMARY OF REQUIREMENTS BY OBJECT CLASS**
(Dollar amounts in thousands)

| | Object Class | 2022 Actual | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/ Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 11.1 | Full-time permanent compensation | $ 4,543 | $ 6,670 | $ 6,920 | $ 6,920 | 0 |
| 11.3 | Other than full-time permanent | 0 | 0 | 0 | - | 0 |
| 11.5 | Other personnel compensation | 157 | 125 | 125 | 125 | 0 |
| 11.8 | Special personnel services payments | 0 | 0 | 0 | - | 0 |
| 11.9 | Total personnel compensation | 4,700 | 6,795 | 7,045 | 7,045 | 0 |
| 12.1 | Civilian personnel benefits | 1,472 | 1,850 | 1,887 | 1,887 | 0 |
| 13 | Benefits for former personnel | 0 | 0 | 0 | - | 0 |
| 21 | Travel and transportation of persons | 123 | 75 | 75 | 75 | 0 |
| 22 | Transportation of things | 170 | 250 | 250 | 250 | 0 |
| 23 | Rent, communications, and utilities | 0 | 0 | 0 | - | 0 |
| 23.1 | Rental payments to GSA | 819 | 2,000 | 2,000 | 2,000 | 0 |
| 23.2 | Rental payments to others | 35 | 50 | 50 | 50 | 0 |
| 23.3 | Communications, utilities, and misc. charges | 869 | 1,800 | 1,800 | 1,800 | 0 |
| 24 | Printing and reproduction | 2 | 4 | 4 | 4 | 0 |
| 25 | Other contractual services | 0 | 0 | 0 | - | 0 |
| 25.1 | Advisory and assistance services | 0 | 100 | 100 | 100 | 0 |
| 25.2 | Other services from non-Federal sources | 52,501 | 81,326 | 82,596 | 82,596 | 0 |
| 25.3 | Other goods and services from Federal sources | 2,260 | 3,750 | 2,193 | 2,193 | 0 |
| 25.4 | Operation and maintenance of facilities | 2 | 0 | 0 | - | 0 |
| 25.5 | Research and development contracts | 0 | 0 | 0 | - | 0 |
| 25.7 | Operation and maintenance of equipment | 21 | 500 | 500 | 500 | 0 |
| 26 | Supplies and materials | 178 | 500 | 500 | 500 | 0 |
| 31 | Equipment | 246 | 1,000 | 1,000 | 1,000 | 0 |

**Department of Commerce**
**National Technical Information Service**
**NTIS Revolving Fund - Reimbursable Obligations**
**SUMMARY OF REQUIREMENTS BY OBJECT CLASS**
(Dollar amounts in thousands)

| | Object Class | 2022 Actual | 2023 Enacted | 2024 Base | 2024 Estimate | Increase/ Decrease from 2024 Base |
|---|---|---|---|---|---|---|
| 32 | Land 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 |
| 99.9 | Total Obligations | 63,398 | 100,000 | 100,000 | 100,000 | 0 |
| | Earned Revenue/Reimbursable Obligations | 63,398 | 100,000 | 100,000 | 100,000 | 0 |
| | Total Obligations | 63,398 | 100,000 | 100,000 | 100,000 | 0 |
| | Personnel Data | | | | | |
| | Full-Time Equivalent Employment: | | | | | |
| | Full-time permanent | 33 | 43 | 43 | 43 | 0 |
| | Other than full-time permanent | 0 | 0 | 0 | 0 | 0 |
| | Total | 33 | 43 | 43 | 43 | 0 |
| | Authorized Positions: | | | | | |
| | Full-time permanent | 42 | 43 | 43 | 43 | 0 |
| | Other than full-time permanent | 1 | 0 | 0 | 0 | 0 |
| | Total | 43 | 43 | 43 | 43 | 0 |

**Department of Commerce**
**National Technical Information Service**
**NTIS Revolving Fund**
**APPROPRIATION LANGUAGE AND CODE CITATION**

FY 2024

NTIS Revolving Fund

For expenses necessary in the conduct of business of the National Technical Information Service

Specific Code Number: 15 U.S.C 1151 et seq. and 3704b

Exhibit 34

**Department of Commerce**
**National Technical Information Service**
**NTIS Revolving Fund**
**ADVISORY AND ASSISTANCE SERVICES**
(Dollar amounts in thousands)

| | 2022 Actual | 2023 Enacted | 2024 Estimate |
|---|---|---|---|
| Consulting Services | 0 | 0 | 0 |
| Management and professional services | 0 | 100 | 100 |
| Special studies and analysis | 0 | 0 | 0 |
| Management & Support Services for research and development | 0 | 0 | 0 |
| Total | 0 | 100 | 100 |

**Department of Commerce**
**National Technical Information Service**
**NTIS Revolving Fund**
**PERIODICALS, PAMPHLETS, AND AUDIOVISUAL PRODUCTS**
(Dollar amounts in thousands)

| | 2022 Actual | 2023 Enacted | 2024 Estimate |
|---|---|---|---|
| Periodicals | - | - | - |
| Pamphlets | - | - | - |
| Audiovisuals | - | - | - |
| Total | - | - | - |

**Department of Commerce**
**National Technical Information Service**
**NTIS Revolving Fund**
**AVERAGE GRADE AND SALARIES**

| | 2022 Actual | 2023 Enacted | 2024 Estimate |
|---|---|---|---|
| Average GS/GM Grade | 13 | 13 | 13 |
| Average GS/GM Salary | 126,620 | 127,885 | 128,000 |

**Department of Commerce**
**National Technical Information Service**
**NTIS Revolving Fund**
**IMPLEMENTATION STATUS OF GAO AND OIG RECOMMENDATIONS**

31 U.S.C. 720, as amended January 3, 2019, requires the head of a federal agency to submit a written statement of the actions taken or planned on Government Accountability Office (GAO) recommendations to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 180 calendar days after the date of the report.

The Good Accounting Obligation in Government Act (GAO-IG Act), passed on January 3, 2019, (P.L. 115-414) requires each agency to include, in its annual budget justification, a report that identifies each public recommendation issued by GAO and the agency's office of the inspector general (OIG) which has remained unimplemented for one year or more from the annual budget justification submission date. In addition, the Act requires a reconciliation between the agency records and the IGs' Semiannual Report to Congress (SAR).

**Section 1. Recommendations for which action plans were finalized since the last appropriations request.**
Nothing to Report

**Section 2. Implementation of GAO public recommendations issued no less than one year ago that are designated by GAO as 'Open' or 'Closed-Unimplemented.'**
Nothing to Report

**Section 3. Implementation of OIG public recommendations issued no less than one year for which Final Action has not been Taken or Action Not Recommended has been Taken**
Nothing to Report

**Section 4. Discrepancies between this report and the semiannual reports submitted by the Commerce Office of Inspector General or reports submitted by the GAO**
Nothing to Report

Exhibit 42

Department of Commerce
National Technical Information Service
NTIS Revolving Fund
Description of Tribal Consultations
(Dollar amounts in thousands)

| | | 2024 Base | | 2024 Estimate | | Increase/Decrease from 2024 Base | |
|---|---|---|---|---|---|---|---|
| | | Personnel | Amount | Personnel | Amount | Personnel | Amount |
| National Technical Information Service: | Pos./BA | 0 | 0 | 0 | 0 | 0 | 0 |
| Information Clearinghouse Program | FTE/Obl | 0 | 0 | 0 | 0 | 0 | 0 |

This is N/A for NTIS

**Overview of Bureau Accomplishments**

The National Technical Information Service (NTIS) helps federal agencies make better decisions about data, with data. We provide the support and structure that helps our partners securely store, analyze, sort, and aggregate data in new ways. We use our private-sector partners' knowledge to create new ways of using data to solve problems. Our Joint Venture program works side-by-side with universities, nonprofits, and industry professionals — together, they can experiment with data science technologies before they're available in the marketplace. NTIS continues to focus on executing initial IAAs in 10 days or less. NTIS continues to expand market penetration into functional areas such as predictive maintenance and data accessibility transformation.

NTIS's data-centric mission continued to help Federal programs scale their capacity quickly through NTIS's joint venture partners who include some of the brightest data science minds in the nation.

- At HHS OIG, NTIS started a new multi-year partnership with HHS OIG to enhance the OIG's ability to protect the integrity of HHS programs as well as the health and welfare of program beneficiaries, which involves over a one trillion-dollar portfolio. This new effort focuses on four areas – Artificial Intelligence, Robotic Process Automation (RPA), text analytics, and waste, fraud, and abuse detection.

- Within FDA, NTIS will continue to partner with FDA to help enhanced real-time interaction with health care practitioners who are involved in public health events and the emergency medical countermeasures, as well as to provide FDA with better oversight of the drug supply chain.

- At DOL, NTIS will continue to work with the DOL OCIO to integrate 15 legacy, data-centric applications, and deliver various economic labor indicators by designing capabilities that enable DOL to discover, connect, and analyze data more effectively.

- At USAID, NTIS will continue to work with the USAID OCIO and the USAID-President's Malaria Initiative (PMI) to develop a data analytics platform that will allow USAID staff to: 1) access diverse data sources, including financial, operational, program and activity management, and activity results and domain-specific micro-data; 2) integrate and manipulate selected data and micro-data; 3) develop models and analyze the data in a collaborative environment1; 4) document and curate data integration and analysis results for re-use; 5) share data resources and findings in a real-time, interactive environment; and 6) support the dissemination of analytical dashboards, reports, and papers by USAID. Current results include the reduction in the analysis of Malaria Operational Plans for 27 different member nations from 1 month to 3 days.

Advance Innovation

- The President's Management Agenda (PMA), as cited in OMB's Memorandum (M-18-23), prioritizes reducing the burden of low-value activities and redirecting resources to accomplishing mission outcomes that matter most to citizens. As a Fed-to-Fed advisor involving data science, NTIS will continue contributing to these reforms by designing innovative data science solutions, which not only harness private-sector expertise, but often by introducing highly efficient, scalable capabilities.

- NTIS will deliver these high-value solutions by working closely with both private-sector partners and other Federal Agencies to streamline

data access and interoperability, leverage new technologies, launch shared service platforms, and incorporate process automation technologies.

- Moreover, NTIS will advance Federal data priorities through (1) efficient data structures: combining data from disparate sources; migrating siloed, legacy Federal data; and improving data interoperability, and through (2) effective data-insights: delivering data-insights, analytical tools, and evidence-based reporting capabilities that inform program management, fiscal planning, policy oversight, and mission outcomes.

- NTIS will improve citizen services; reduce fraud, waste, and abuse; and maximize return on taxpayer investments via efficient Federal data-driven services.

These innovative data-centric accomplishments will be achieved through partnerships with the private-sector, which leverages their cutting-edge data expertise, to help Federal programs accomplish mission outcomes.

**Analysis of Performance Indicators**

In FY 2022, NTIS met all strategic objectives, except for the yearly average number of days required to complete public-private projects (or Government- Industry projects) entered under the Joint Venture Authority due to the impacts of widespread Federal government focus on both COVID-19 directly and the impacts of COVID-19 on their respective operations.

| Class | Strategic Objective | Performance Indicator | FY 2022 Projection | FY 2022 Actual | FY 2022 Status | FY 2023 Target | FY 2024 Target |
|---|---|---|---|---|---|---|---|
| Current / Recurring | 1.2 | Number of new public-private projects (or Government-Industry projects) entered into under the Joint Venture Authority per year | 21 | 5 | Exceeded | 8 | 10 |
| Current / Recurring | 1.2 | Yearly average number of days required to complete public-private projects (or Government- Industry projects) entered into under the Joint Venture Authority | 106 | 90 | Not Met | 90 | 120 |
| Current / Recurring | 1.2 | Total investment by the Federal Government on new public-private projects (or Government-Industry projects) entered into under the Joint Venture Authority | $ 37,381,873 | $ 25,000,000 | Exceeded | $ 30,000,000 | $ 35,000,000 |

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