

Testimony of

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*An Overview of the Budget Proposal for
the National Institute of Standards and Technology for
Fiscal Year 2024*

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Introduction

Chair Lucas, Ranking Member Lofgren, and Members of the Committee, I am Laurie Locascio, Under Secretary of Commerce for Standards and Technology and the Director of the Department of Commerce's National Institute of Standards and Technology – known as NIST. Thank you for the opportunity to appear before you today to discuss the President's Fiscal Year (FY) 2024 budget request for NIST and how this request will enable NIST continue efforts toward increasing U.S. industrial competitiveness, accelerating innovation, and ensuring economic and national security. NIST has contributed to American economic and scientific success since its creation by Congress in 1901. In recognition of the continued importance of standards to U.S. security and prosperity, NIST leads the implementation of the just-announced U.S. Government National Standards Strategy for Critical and Emerging Technologies (USG NSS CET) and plays leading roles in international standards organizations that affect everything from building codes to biotechnology. NIST has also driven cutting-edge research in measurement tools, metrics, and models – allowing the United States to lead the world in technological development through more than a century of massive changes in the way that people work, live, and communicate. Given that technology is constantly and rapidly evolving in an environment of global competition, it is more important than ever that the United States' national metrology institute leverage its breadth and depth of experience across the full spectrum of technology areas to meet the next series of challenges. This focus will help ensure that America retains its competitive edge in critical and emerging technologies and manufacturing across multiple sectors.

NIST is the sole government agency with a mission to enhance industrial competitiveness in the U.S., and we meet this broad and unique mission through our extraordinarily diverse workforce and by honoring our core values of perseverance, integrity, inclusivity, and excellence. NIST plays a critical role in measurement science, standards, and technology. In the standards ecosystem, NIST ensures that measurements made by instruments and sensors for manufacturing, the environment, agriculture, and the military can be traced back to the true value of a unit – be that the kilogram, the meter, or another International System of Units, aka “SI.” This traceability reduces downtime on the manufacturing floor when instruments or parts are swapped out, increases confidence and accountability in commerce, and supports safety and efficacy in healthcare.

In addition, the members of NIST's technical staff lend their impartial expertise to private-sector and international organizations that develop documentary standards, the written agreements between producers and/or users about performance, compatibility, or safety of a product. By leveling the playing field, standards reduce risks and transaction costs for products and broader markets. This supports economic growth and competitiveness – especially in technology-based markets. NIST's involvement as an honest broker and technical expert is critical to the integrity and quality of these documentary standards.

Measurements and standards are critical to every aspect of society, trade, and innovation. They provide a common language to measure and evaluate performance, ensure interoperability of components made by different companies, and protect consumers by ensuring safety, durability, and market equity. Without well-understood, verified measurements, every step in the product

development and commercialization cycle stalls – from invention to refinement, manufacture to sales, regulation to decommissioning.

It takes close ties to many different stakeholders to develop the deep understanding of the technical and economic drivers that influence emerging technologies. But these partnerships are necessary to successfully support the innovations that will shape the future. And that is where NIST excels, with our broad technical portfolio that supports the increasingly complex needs of the U.S. economy. For example, NIST continues to advance both the technologies and the fundamental science needed to expand quantum applications. NIST recently demonstrated a new device that marks an important step toward quantum information systems by enabling the transmission and manipulation of the smallest unit of light, the photon, with minimal loss. NIST also developed very efficient detectors based on superconducting nanowires only one-thousandth the width of a human hair that can improve the search for elusive dark matter—theorized to account for 85% of the universe’s matter. NIST continues to support the quantum ecosystem through engagement with quantum institutes such as the Quantum Economic Development Consortium (QED-C) and The Quantum Systems through Entangled Science and Engineering (Q-SEnSE) Institute.

Ensuring NIST’s continued excellence will provide the Nation with a critical asset for strengthening American competitiveness. For example, NIST’s work in bioscience provides measurement assurance through the development of quantitative analytical measurement tools for translation and deployment of innovative biotechnologies. NIST standards and reference materials in this area underpin advances in biotechnology and biomanufacturing, contributing to better human health and a stronger U.S. economy. To ensure the needs of the biotechnology industry, NIST communicates and collaborates directly with industry stakeholders through consortia. One example is the NIST Genome Editing Consortium, where NIST leads a group of 47 member entities from industry, academia, and government to identify common pre-competitive measurements and standards needed to establish greater confidence in the characterization of genome editing outputs. The advances developed by the consortia are available to all members and serve to move the entire field forward for increased industrial competitiveness.

The President’s budget request positions NIST to revitalize U.S. manufacturing through investments in developing a technically skilled workforce, advancing new technologies, and providing measurement solutions for America’s manufacturers. NIST will continue its mission that it began in 1901, as it works to secure a better future for American industry and the American people and continues to be the best measurement institute in the world.

Fiscal Year 2024 Budget Request

The President’s budget requests a total of \$1.6 billion for NIST in FY 2024. This will allow NIST to advance U.S. innovation and industrial competitiveness. This will also allow NIST to address the widespread and rapidly worsening deterioration of its nearly 70-year old facilities, to prevent their poor condition from interfering with NIST’s ability to carry out its mission to the American people. The request will grow funding for critical mission areas, expand NIST’s

manufacturing programs, and fully fund inflationary adjustments to current programs. The request includes \$358.5 million for new programmatic initiatives and facilities improvements and \$41 million for inflationary adjustments. These investments will enable NIST to modernize measurement services, drive discoveries in emerging technologies such as cybersecurity, artificial intelligence, quantum information science, and synthetic biology; advance technologies to help mitigate climate change and enable adoption of clean energy solutions; provide measurement solutions for U.S. manufacturers; revitalize U.S. manufacturing through investments in workforce and technology; promote a more secure and resilient supply chain through new research, standards, and engagement with America's manufacturers; and strengthen equity and diversity in the workforce to position NIST for continued success in the future.

Scientific and Technical Research Services (STRS) (\$995.0 million, +\$ 104.5 million in initiatives)

As new technologies develop and evolve, NIST's measurement research and services remain foundational to underpin national defense, homeland security, trade, and innovation. To carry out this critical mission, the President's budget requests an increase of \$104.5 million across NIST's research programs, including increases of \$20.0 million for leadership in critical and emerging technologies, \$20.0 million for cybersecurity, \$8.0 million to ensure trustworthy and resilient domestic supply chains, \$5.5 million for climate and the environment, \$15.2 million for efforts to enhance NIST's mission delivery, and \$35.8 million for inflationary adjustments.

Leadership in Critical and Emerging Technologies (CETs) (+\$20.0 million)

CETs will be the major drivers for domestic and global economic growth in the future and will have profound impacts on the security and well-being of the American people. NIST has a long history of groundbreaking research in each of the major CET areas. It is essential that NIST remain in a strong leadership position in both measurement science and standardization for every CET. While the U.S. leads in many of these areas, other countries, particularly China and the members of the European Union, are ramping up their investments in CETs with the goal of achieving competitive dominance in each one by the end of the decade. As these emerging technologies evolve toward maturity, they present moving targets that require continuous innovation and development in both standardization and metrology.

For example, artificial intelligence (AI) systems and technologies are already shaping our world, and as they continue to evolve, they may bring great benefits but also great risks to the nation's economic and national security. As this CET continues to rapidly evolve, NIST is championing the development of AI systems that are trustworthy and responsible in practice and use, and has positioned itself as a domestic and international leader in cultivating trust in the design, development, use, and governance of AI systems. In January 2023, NIST released Version 1.0 of the AI Risk Management Framework (RMF) to help manage risks associated with AI to individuals, organizations, and society. The AI RMF was a result of efforts begun in 2021, including NIST engagements with AI stakeholders through Requests for Information, draft frameworks for public comments, and workshops. NIST is a global AI leader, participating in conversations about AI policies and legislation in several international bodies. For example,

NIST serves as the vice chair of the Working Party on AI Governance (AIGO) within the Organization for Economic Co-operation and Development (OECD) and also developed a Joint Roadmap on Evaluation and Measurement Tools for Trustworthy AI and Risk Management with the EU as part of the Trade and Technology Council (TTC) ministerial in 2022.

These developments in AI are just a few examples of how NIST uses its staff expertise and its unique non-regulatory role to anticipate emerging technological and standardization challenges and then proactively respond to those challenges. As these challenges multiply in the coming years and decades, NIST will need additional resources to keep America ahead of the curve.

The FY 2024 budget request includes an increase of \$20.0 million to support NIST's ongoing work on CETs. This includes the following areas:

- **Artificial Intelligence.** The FY 2024 budget request includes an increase of \$5.0 million to support the NIST AI Collaborative Institute, increase technical expertise in research efforts, and establish new testbeds for benchmarking and evaluating AI systems in collaboration with industry experts. This will expand NIST's capacity to build the confidence and trust in AI systems necessary for U.S. businesses to take full advantage of transformational technologies.
- **Quantum Information Science.** The FY 2024 budget request includes an increase of \$5.0 million for quantum information science to 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 will expand work with existing partners such as the Quantum Economic Development Consortium (QED-C) to enhance innovation from early-stage discovery and proof-of-concept to incubators, enabling NIST to facilitate the development of quantum technologies and promote economies of scale with an emphasis on practical quantum applications.
- **Biotechnology.** The FY 2024 budget request includes an increase of \$5.0 million to support the development of platform technologies for responsive and standardized biomanufacturing, and merging automation and AI with biological data to rapidly create innovative biotechnologies in support of cross-sector bioeconomy efforts in health care, climate, food and agriculture, energy, and supply chain resilience.
- **Advanced communications.** The FY 2024 budget request includes an increase of \$5.0 million 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. As China's attempts to gain an advantage over the United States in international standards, 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.

Leadership in Cybersecurity and Privacy (+\$20.0 million)

Cybersecurity is a research area that is now foundational to every economic sector and is essential for national security. As cybersecurity threats continue to evolve, the government and industry will rely upon NIST for research, technical standards, and best practices to secure individuals and organizations and inform policy. Some recent examples where NIST is meeting this need is through NIST's Cybersecurity Framework (CSF) and Digital Identity Guidelines. NIST's CSF is widely used to help organizations better understand, manage, reduce, and communicate cybersecurity risks. In 2022, NIST began updating the CSF to keep pace with the evolving cybersecurity landscape. In January 2023, NIST released the CSF 2.0 Concept Paper outlining the significant potential changes in the CSF, informed by stakeholder feedback to a Request for Information. This is just the start of a series of engagements with stakeholders that will lead to the update of the CSF. NIST also is updating its Digital Identity Guidelines, which help organizations protect against fraud and cybercrime, preserve privacy, foster equity, and deliver services to the right people by supporting risk-informed management of individuals' online "digital identities."

New challenges in cybersecurity and privacy have also emerged with the development and use of the CETs already mentioned. Because it is critical to maintain U.S. leadership for economic and national security, especially with respect to the CETs, NIST is placing even more emphasis on cybersecurity within the President's budget request.

The FY 2024 budget request includes an increase of \$20.0 million to extend and strengthen capacity to conduct cybersecurity and privacy research and to develop practical and actionable standards and guidelines in areas of critical national importance. This includes the following areas:

- **National Cybersecurity Center of Excellence (NCCoE).** The FY 2024 budget request will support enhanced efforts of NIST's NCCoE to demonstrate the practical application of NIST cybersecurity and privacy solutions and guidance.
- **Cybersecurity Education and Workforce Development.** The FY 2024 budget request will allow for increased support for The National Initiative for Cybersecurity Education (NICE) Regional Alliances and Multistakeholder Partnerships to Stimulate (RAMPS) Cybersecurity Education and Workforce Development to address industry needs within a local or regional economy by organizing multiple employers with skill shortages in specific occupations.
- **Research, standards, guidance.** The FY 2024 budget request will allow NIST to extend and strengthen its capacity to conduct research and develop practical and actionable standards and guidelines in areas of critical national importance, such as in biometrics and human factors, privacy-enhancing techniques and cryptography, and commercial and open-source software, hardware, and industrial Internet of Things (IoT) device development and implementation.
- **Congressional mandates and Executive Orders.** The FY 2024 budget request will provide increased ability for NIST to support the Federal government in its response to laws and Executive Orders, including the National Defense Authorization Act (NDAA)

of 2021, Federal Information Security Modernization Act of 2014, Internet of Things Cybersecurity Improvement Act of 2020, and Cybersecurity Enhancement Act of 2014.

Trustworthy and Resilient Domestic Supply Chains (+\$8.0 million)

Declines in U.S. manufacturing jobs lead to a loss in innovation capacity, a necessity for robust supply chains. The U.S. recognizes the need to reclaim our domestic manufacturing leadership as U.S. competitiveness in manufacturing will be dependent upon domestic capabilities in trustworthy and resilient supply chains. Advances to improve the trustworthiness of supply chains will be needed for next-generation applications, such as internet of things and national defense. Trusting that commodities moving within the supply chain are authentic, functional, reliable, and secure is paramount to a thriving manufacturing environment. By taking advantage of advanced manufacturing, NIST can help build back the strength of our SMMs by creating a more resilient domestic manufacturing landscape that can supply not only materials, but jobs across the entire Nation.

The FY 2024 budget request includes an increase of \$8.0 million to support NIST's ongoing work on trustworthy and resilient supply chains. This includes the following areas:

- **Building Trust in Supply Chains.** The FY 2024 budget request includes an increase of \$4.0 million to improve cybersecurity in supply chains, which would build trust and address vulnerabilities within manufacturing facilities and help secure industrial data.
- **Verifying Component Authenticity.** The FY 2024 budget request includes an increase of \$2.0 million to develop methods for ensuring provenance and integrity of critical components in the domestic supply chain, including methods for detecting counterfeit or adulterated components.
- **Advanced Manufacturing Technologies.** The FY 2024 budget request includes an increase of \$2.0 million to develop circular and advanced manufacturing technologies to reduce reliance on rare essential materials such as critical minerals needed to produce semiconductors and batteries.

U.S. Leadership in Climate and the Environment (+\$5.5 million)

NIST laboratories address climate change in impactful ways from measurements to modeling. The data collected and the systems modeled at NIST help to build more resilient communities and to enable an alternative energy infrastructure. NIST programs advance the development of standards, frameworks, and other resources for enabling climate and environment-related metrology. For example, NIST collaborated with the University of Colorado Laboratory for Atmospheric and Space Physics (LASP) to launch the Compact Total Irradiance Monitor (CTIM), a small satellite sensor that measures solar irradiance using a novel NIST-on-a-CHIP detector that provides on-board calibrations. These types of advanced measurements are critical to understanding the Sun's impact on Earth's atmosphere.

The FY 2024 budget request includes an increase of \$5.5 million to assess the impact of carbon in the environment and build upon our core strengths in measurements and technologies that will be used to address climate impacts for the foreseeable future:

- **Carbon Dioxide (CO₂) Removal Strategies.** The FY 2024 budget request includes an increase of \$2.0 million for developing the underpinning metrology and standards to enable quantification of carbon dioxide removal using direct air capture (DAC) and innovative solutions (e.g., biological engineering) from natural-based sources, including agriculture, oceans, forests, coastal regions, wetlands, and lakes; and developing a comprehensive approach for ensuring the accuracy and trustworthiness of data used in carbon accounting.
- **Greenhouse Gas (GHG) Measurement Tools and Standards.** The FY 2024 budget request includes an increase of \$3.5 million for expanding NIST’s efforts in GHG measurement and monitoring, working in coordination with other federal agencies including NOAA, NASA, EPA, and other interagency efforts. NIST is a leading contributor to a planned 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.

Efforts to Strengthen NIST’s Mission Delivery (+\$15.2 million)

To keep pace with the growing diversity and urgency of needs to support industrial and national needs, improvements to NIST mission delivery are essential. For example, measurement services at NIST include the creation and maintenance of standard reference materials that are characterized with the highest attainable certainty. However, given the needs of sectors such as the health industry, the time to create and certify these materials often needs to be faster and more fit-for-purpose than what has been previously accomplished. Meeting these specific national needs include the recent development of reference grade test materials (RGTMs) for SARS-CoV-2 and mpox (previously known as monkeypox) that were created as positive control test materials for quality assurance of diagnostic tests. These tests were needed to quickly and accurately diagnose patients to help slow the spread of these viruses. The RGTMs were created to fit the purpose of rapidly providing accurate quality control materials, and in the case of the mpox RGTM, was made available to stakeholders by NIST in only 30 days. This is one example of how NIST is innovating to keep up with the current and future needs of the nation.

The FY 2024 budget request includes an increase of \$15.2 million to strengthen NIST’s mission delivery capabilities in measurement services, workforce development, and post-disaster investigations:

- **Measurement Service Modernization.** The FY 2024 budget request includes an increase of \$5.0 million to develop platforms to accelerate rapid deployment of critical industry-needed reference materials in the bioeconomy, food safety, and semiconductors and to expand foundational measurements for the next generation of devices for critical positioning, navigation, and timing applications that reduce the risk of vulnerabilities within our global shipping, manufacturing, power grid, communications, transportation, finance, emergency response, and defense systems.

- **Equity and Diversity.** The FY 2024 budget request includes an increase of \$2.2 million to diversify and increase the STEM workforce through strategic partnerships with minority serving institutions, and targeted STEM recruitment and retention strategies, such as development of a mechanism for reintegrating STEM workers who have taken a pause in their careers.
- **National Construction Safety Team (NCST) Act Implementation.** The FY 2024 budget request includes an increase of \$5.0 million to deploy investigative teams of experts with skills relevant to post-disaster building failure investigation. 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 to prioritize the success of these critical investigations.
- **NIST Center for Neutron Research.** The FY 2024 budget request includes an increase of \$3.0 million to add new capabilities in extreme environment testing and pre-characterization to maintain U.S. leadership in cutting-edge neutron research. This will allow users to characterize their samples more accurately in their intended environment, such as industrial processing, before placing them in a neutron beam.

Construction of Research Facilities (CRF) (\$262.1 million, +\$128.6 million in initiatives)

On both its main campuses, NIST’s 60- to 70-year-old facilities are degrading rapidly and at an accelerating rate. The National Academies of Science, Engineering, and Medicine (NASEM) concluded a study on the condition of NIST’s facilities in February 2023; the report describes a dire situation that requires urgent and immediate action to remedy, stating:

“...that facility issues are preventing NIST from achieving its mission, that valuable researcher time is being wasted due to inadequate facilities, and that in many cases NIST facilities are no longer world class.”

The report contains numerous examples of the seriousness of the issues with NIST’s laboratories, stating, “many research facilities are not suitable to the measurement science research that is the essence of what NIST does.” For example, it is often difficult or impossible for NIST researchers to control environmental factors like humidity to the degree that allows them to perform the high-precision measurement science services that modern U.S. industry requires. At its site in Gaithersburg, MD, NIST maintains a calibration service that supports medical radiation therapy, industrial sterilization and disinfection, and radiation safety, but it is out of service because its laboratory, constructed in 1964, lacks adequate environmentally controlled conditions. Meanwhile, at the NIST site in Boulder, a project to develop energy-saving electronics, essential to enhancing the competitiveness of the U.S. semiconductor industry, is losing at least 15% of PhD-level staff time because power failures and power spikes damage equipment or require lengthy restarts, while contamination by dust limits the number of devices the lab can produce, preventing the staff from exploring cutting-edge device fabrication techniques.

These compounding problems are already causing major productivity losses and preventing NIST from performing the highly accurate and demanding measurement research needed by U.S. industry and the scientific community, and particularly its work maintaining U.S. leadership in

the critical and emerging technologies already mentioned here today. The current challenging laboratory conditions are creating significant inefficiencies for NIST staff, and the aging facility systems present numerous safety concerns.

Investing in repair, refurbishment, and upkeep of NIST's facilities would produce major and immediate benefits. The NASEM report notes that investments to improve NIST facilities could equate to an up to 40 % increase in impact and output for NIST research staff, and aid in the recruiting and retention of the top talent that NIST will need to maintain its leadership position across the full range of CETs that will impact the U.S. economy in the coming decades.

For NIST to continue leading the world in measurements and standards and to continue having the most talented staff to carry out its many activities that enhance U.S. economic activity and national security, we must address the condition of our facilities through sustained investment. Based on the condition of NIST's facilities, NASEM estimates repairing and refurbishing these facilities will require an expenditure of at least \$400 million per year over 12 years. The FY 2024 budget request is just a first step towards a multi-year effort to address NIST's most critical facilities problems.

The FY 2024 budget request includes an increase of \$128.6 million to address NIST facilities needs and \$3.5 million in inflationary adjustments for the most critical utility infrastructure issues:

- **Gaithersburg Central Utility Plant (CUP) Modernization.** The FY 2024 budget request includes an increase of \$50.0 million to provide for the full modernization of the CUP to replace all existing infrastructure and older equipment with new state-of-the-art sustainable systems.
- **Repair and Revitalization of NIST Facilities.** The FY 2024 budget request includes an increase of \$48.6 million to support infrastructure improvements and enhancement of research spaces, ensuring that NIST can support a leading-edge research and development program that advances U.S. innovation in quantum information science, biotechnology, artificial intelligence, advanced manufacturing, cybersecurity, privacy, 5G and 6G telecommunications, and other critical programs.
- **Multiple HVAC System Replacements.** The FY 2024 budget request includes an increase of \$30.0 million to ensure air handling units and related heating, ventilation, and air conditioning distribution systems in most buildings across the Gaithersburg, MD campus provide clean, temperature-controlled air at proper ventilation rates.

Industrial Technology Services (ITS) (\$374.9 million, +\$ 161.2 million in initiatives)

NIST's extramural programs, which include the Hollings Manufacturing Extension Partnership (MEP) and Manufacturing USA, are truly unique partnerships in the U.S. innovation ecosystem. Combined, the two programs help U.S. industry develop and implement new technologies, develop robust supply chains, refine their systems for efficiency and effectiveness, and increase engagement of underserved communities in workforce development programs.

The MEP Network has Centers in all 50 states and in Puerto Rico. Each Center is a partnership between the federal government and a variety of public or private entities, including state, university, and nonprofit organizations. Last year, MEP Centers interacted with more than 33,500 U.S. manufacturers, leading 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. With the enacted funding in FY 2023, MEP invested \$20.4 million in its Centers across the country to initiate the Supply Chain Intelligence Network and identify vulnerabilities and gaps in the current manufacturing ecosystem as part of the MEP Expansion Awards Pilot Program (MEAPP).

Manufacturing USA institutes bridge the gap from discovery to production and help ensure that U.S. inventions get out of the labs and are translated into products that are manufactured in the United States. Sixteen institutes have been established to date, on technologies such as additive manufacturing (America Makes) and biomanufacturing (NIIMBL). Last year, the Institutes worked with more than 2,300 member organizations, collaborated on over 700 R&D projects, and engaged over 90,000 people in workforce development. In September 2022, NIST published a Request for Information (RFI) regarding the creation of up to three new Manufacturing USA institutes focused on semiconductor manufacturing. The institutes, authorized and funded by the Creating Helpful Incentives to Produce Semiconductors (CHIPS) for America Act, will enhance U.S. leadership in semiconductor manufacturing through advanced research, education, and workforce development. In 2023, using funds from the FY 2023 omnibus appropriation, a new NIST-funded institute will be established, broadly competed on all topics of priority for U.S. manufacturing competitiveness.

The FY 2024 budget includes an increase of \$161.2 million and \$1.7 million in inflationary adjustments to ensure these programs can address the most pressing challenges facing our nation's manufacturing ecosystem:

- **Manufacturing Extension Partnership (MEP).** The FY 2024 budget request includes an increase of \$100.9 million to narrow the workforce gap, mitigate supply chain vulnerabilities, and leverage advanced technologies for growth oriented SMMs as they respond to critical national needs. MEP will increase support for the recently piloted National Supply Chain Optimization and Intelligence Network that scales supply chain expertise and provides solutions to SMMs in every MEP Center, and increase participation in national domestic manufacturing initiatives, like Buy America and Build America, that support a healthy domestic manufacturing base. MEP Centers will support small and medium manufacturers with wraparound services to find new markets and pivot operations, including adopting new technologies and training of skilled workforce, to increase U.S. Domestic manufacturing capacity. New funding will build 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.

- **Manufacturing USA.** The FY 2024 budget request includes an increase of \$60.3 million to 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 for the creation and operation of testbeds, facilities for evaluating new manufacturing techniques, including for critical scale-up technologies, at Manufacturing USA institutes that will help manufacturers stay competitive and serve as training grounds for an emerging workforce. The funds will 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.

Summary

NIST played an important part in the economic expansion of the mid-to-late 20th Century, which led to broad economic prosperity in the United States and generated major societal benefits such as expanded educational opportunities, improved health and longer lifespans, and increases in equity. The President’s budget will allow NIST to have continued impact advancing the frontiers of critical technologies that will accelerate and drive future innovation and increase the competitiveness of U.S. industry. With NIST’s dedicated technical staff, unique facilities, and trusted, objective, non-regulatory role, NIST is ready to continue work that grows the U.S. economy, improves Americans’ quality of life, and strengthens our national security. With the continued support of this Committee, NIST will excel as it carries out its important and ongoing mission to advance U.S. innovation and industrial competitiveness.

Dr. Laurie Locascio, Under Secretary of Commerce for Standards and Technology/Director of the National Institute of Standards and Technology



Laurie E. Locascio is the 17th director of NIST and the fourth Under Secretary of Commerce for Standards and Technology. In this role, she provides high-level oversight and direction of NIST.

Dr. Locascio most recently served as vice president for research at the University of Maryland College Park and University of Maryland Baltimore, where she focused on the development of large interdisciplinary research programs, technology commercialization, innovation and economic development efforts, and strategic partnerships with industry, federal, academic, and nonprofit collaborators. She also served as a professor in

the Fischell Department of Bioengineering at the A. James Clark School of Engineering with a secondary appointment in the Department of Pharmacology in the School of Medicine.

Before joining the University of Maryland, Dr. Locascio worked at NIST for 31 years, rising from a research biomedical engineer to eventually leading the agency's Material Measurement Laboratory (MML). She also served as the acting associate director for laboratory programs, the No. 2 position at NIST, providing direction and operational guidance for NIST's lab research programs.

As director of MML, one of NIST's largest scientific labs, Dr. Locascio oversaw 1,000 research staff in eight locations around the United States and a \$175 million annual budget and recruited top talent, fostered excellence, and built a collegial and collaborative workplace. She implemented strategic partnerships with universities, industry, and other government labs, including a partnership with the University of Maryland's Institute for Bioscience and Biotechnology Research at the Universities at Shady Grove. Before that, Dr. Locascio served as chief of MML's Biochemical Sciences Division.

Dr. Locascio's most recent honors and awards include her 2021 induction as a fellow of the National Academy of Inventors, the 2017 American Chemical Society Earle B. Barnes Award for Leadership in Chemical Research Management, and the 2017 Washington Academy of Sciences Special Award in Scientific Leadership. She has published 115 scientific papers and has received 12 patents in the fields of bioengineering and analytical chemistry. Her honors and awards also include the Department of Commerce Silver and Bronze Medal Awards, the American Chemical Society Division of Analytical Chemistry Arthur F. Findeis Award, the NIST Safety Award and the NIST Applied Research Award. She is also a fellow of the American Chemical Society and the American Institute for Medical and Biological Engineering.

Dr. Locascio has a B.S. in chemistry from James Madison University, an M.S. in bioengineering from the University of Utah, and a Ph.D. in toxicology from the University of Maryland Baltimore.