

March 24, 2021

The Honorable Jeanne Shaheen  
Chairwoman  
Subcommittee on Commerce, Justice,  
Science, & Related Agencies  
Senate Committee on Appropriations  
SH-125  
Washington, D.C. 20510

The Honorable Jerry Moran  
Ranking Member  
Subcommittee on Commerce, Justice,  
Science, & Related Agencies  
Senate Committee on Appropriations  
SD-142  
Washington, D.C. 20510

The Honorable Matthew Cartwright  
Chairman  
Subcommittee on Commerce, Justice,  
Science, & Related Agencies  
House Committee on Appropriations  
H-310 The Capitol  
Washington, DC 20515

The Honorable Robert Aderholt  
Ranking Member  
Subcommittee on Commerce, Justice,  
Science, & Related Agencies  
House Committee on Appropriations  
1016 Longworth House Office Building  
Washington, D.C. 20515

Dear Chairs Shaheen and Cartwright and Ranking Members Moran and Aderholt:

On behalf of the undersigned scientific and engineering societies, industry associations, companies and universities, we write to express our strong support for the National Institute of Standards and Technology (NIST), an agency vital to solving the technical challenges faced by U.S. businesses and academic researchers.

We urge you to provide robust funding support for NIST's Scientific and Technical Research and Services (STRS) programs and construction account within fiscal year 2022 (FY22) appropriations. We recommend that Congress **increase STRS funding at a minimum of \$150 million above FY21** to further advance research projects in key areas, including artificial intelligence, quantum, advanced communications and STEM education activities. Finally, due to the ongoing need for repairs and maintenance at NIST facilities, with a current backlog of \$834.5 million in deferred maintenance, and the direct impact on NIST's ability to provide critical services to industry, we request **\$100 million above FY21 for the NIST construction account**. While the internal NIST construction needs are the priority, we additionally request **robust funding for NIST's Construction Grant Program (NCGP)** for grants to universities and nonprofit institution to construct new or expand existing research facilities.

NIST works with our nation's businesses and universities to drive American economic growth and job creation. Companies, academic institutions and other federal agencies rely on STRS programs to provide foundational research and material development for their products and programs. NIST supports America's global competitiveness by aiding businesses to overcome technical obstacles— fulfilling a vital function that companies cannot do themselves. NIST's core measurement science programs, for example, provide calibrations and standards for industry broadly – from oil and gas to aerospace and medicine.

The agency also plays an essential role in emerging industries, such as quantum technology and artificial intelligence that require foundational measurements to enable U.S. dominance. The National Quantum Initiative Act, which passed with overwhelming bipartisan support in 2018, includes NIST as one of three key agencies that will help ensure the U.S. remains a global leader in quantum. The bill also authorizes the Quantum Economic Development Consortium (QED-C), a jointly funded government and private sector collaboration designed to tackle some of the challenges of moving quantum technologies from the lab to market.

In the area of artificial intelligence (AI), NIST is researching the performance and reliability of AI systems to assist in the development of international standards, as well as increase public trust in these systems making way for widespread adoption and innovation. NIST has also been tasked with developing an AI accountability framework to ensure ethical, transparent, and accountable use of AI technologies across all sectors.

In addition to AI and quantum, NIST continues to be a leader in advanced communication research through their work on 5G, PNT and internet of things (IoT). The institutes work on 5G standards is critical to the success of widespread deployment. Regarding IoT, a term that describes any physical device that is connected to the internet, NIST draws on its long history of research on cybersecurity issues to provide recommendations on security standards for the community to mitigate risk and ensure the public trust in these devices. Additionally, NIST has announced plans to accelerate work to identify and promote responsible methods of using PNT services, including GPS, in direct coordination with industry.

Lastly, modern, functional facilities are required for NIST to remain the world-leader in measurement science. Currently, NIST's aging infrastructure cannot consistently support the temperature, humidity, and power requirements for world-class measurements. Recurring failures of these utility systems in recent years has resulted in lost work and costly damage to laboratory facilities. The over 50-year-old facilities in Maryland and Colorado currently have a backlog of \$834.5 million in deferred maintenance. The appropriation requested plus up of \$100 million would be divided between \$80 for maintenance and \$20 million for new construction. The new construction funding would be utilized to build new laboratory space at both NIST facilities so staff can be moved in and out of this new space in order to fully address the maintenance needs in the current labs.

Furthermore, NIST's Construction Grant Program (NCGP) provides grants to universities and nonprofit institutions to construct new or expand existing research facilities; however, the program is currently unfunded. If this program were restored, research universities across the country could apply for funds to modernize facilities and significantly expand opportunities for academic, industry and government researchers to engage in highly innovative R&D projects.

For example, the University of Colorado Boulder could apply for funding to modernize JILA, the university's joint institute with NIST. JILA is a world-leader in quantum information science and technology research, collaboration and training. Two-thirds of JILA's current laboratories are more than 50 years old. Modern facilities able to fully support JILA's pioneering research and training missions are critical to accelerating the nation's leadership in quantum. The modernized JILA laboratories will provide premier space for collaboration between quantum science and engineering, hands-on education and work force training, and industry engagement. Additionally, the University of Maryland could apply for funding to support the construction of a Quantum Science and Technology Testbed Facility, which would focus on quantum systems that share common underlying technologies. This will allow outside users, including industry, federal agencies, and academia to significantly increase the progression of fundamental quantum science to deployed technologies.

For FY22 appropriations, we urge increased investment in NIST's core laboratory research programs in the STRS account at a minimum of \$938 million. Additionally, we urge Congress to appropriate \$180 million for NIST facilities and construction and robust funding for NIST's Construction Grant Program (NCGP).

Thank you for your consideration, and we look forward to working with you as the appropriation process continues.

Sincerely,

American Association of Physicists in Medicine  
(AAPM)

American Chemical Society

American Institute of Physics

American Physical Society

Atom Computing

AVS – The Society for Science and Technology of  
Materials, Interfaces, and Processing

Coherent Inc.

Computing Research Association

Cosmic Microwave Technology, INC

Cryomech, Inc.

George Mason University

Google

HRL Laboratories, LLC

IBM

Internet Association

IonQ, Inc.

Keysight Technologies

Materials Research Society

Microsoft

OSA-The Optical Society

Photodigm, Inc.

Rockwell Automation

Security Industry Association

Southern University and A&M College

SPIE, the international society for optics and photonics

Terranet Ventures

U.S. Chamber of Commerce Technology Engagement Center (C\_TEC)

University of Colorado, Boulder

University of Maryland, College Park

XMA Corporation