FRANK D. LUCAS, Oklahoma
CHAIRMAN

ZOE LOFGREN, California
RANKING MEMBER

Congress of the United States
House of Representatives
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
2321 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515–6301
(202) 225–6371
www.science.house.gov

March 31, 2023

Committee on Appropriations
Commerce, Justice, and Science Subcommittee
H-307, The Capitol
Washington, DC 20015

Dear Chair Rogers and Ranking Member Cartwright,

As you begin work on the Fiscal Year 2024 Commerce, Justice, and Science Appropriations Bill, I urge you to prioritize funding for science and technology as a critical investment to ensure long-term U.S. economic competitiveness and national security.

Specifically, my top account and programmatic funding priorities for the FY 2024 Commerce, Justice, Science and Related Agencies Appropriations Act are as follows:

- **National Science Foundation:** Support a total funding level of $13.3 billion for NSF, a level that falls short of the funding authorized in the *CHIPS and Science Act of 2022* but even so will help ensure that NSF will be successful in its goals of supporting transformative research, moving research results out of the lab for the benefit of society, supporting regional diversification of science and innovation, and nurturing a new generation of U.S. STEM talent. Specifically, this level would support the President's budget request for most accounts, but provide an increase to $10.5 billion for Research & Related Activities (R&RA) and an increase to $2.0 billion for STEM Education (EDU).
- **National Institute of Standards and Technology**: Support a total funding level of $1.937 billion, a level that represents a compromise between the President's FY24 budget request and the level authorized in the *CHIPS and Science Act of 2022*. Specifically, this total includes $1.3 billion for Scientific and Technical Research Services (STRS), halfway between the authorized level and the President's request, and the President's request levels of $375 million for Industrial Technology Service (ITS) and $262 million for Construction of Research Facilities.
- **National Oceanic and Atmospheric Administration:** Support, at a minimum, the President's FY24 request of $6.8 billion for NOAA, which includes an increase of $370 million in support of NOAA's weather satellites.

- **Economic Development Agency:** Support the FY24 authorized level of $1.485 billion for the Innovation and Technology Hubs Program authorized in the *CHIPS and Science Act of 2022*; and the President's FY24 request of $200 million for the RECOMPETE Pilot program, which also reflects the authorized level.
- **National Aeronautics and Space Administration:** Support, at minimum, the President's FY24 request of $27.2 billion for NASA to advance a multi-mission portfolio of space and Earth science, human exploration, space technology, and STEM activities. Provide sufficient funding to, at minimum, account for inflationary impacts, especially in the agency's development programs, support investments to maintain momentum toward the nation's goals for NASA's Moon to Mars program, especially following the historic milestone of the Artemis I mission, and support sufficient resources to maintain overall programmatic balance and progress on implementing National Academies decadal survey science priorities.

Last summer, Congress enacted the CHIPS and Science Act of 2022, once-in-a-generation science and technology legislation comparable to the landmark National Defense Education Act of 1958 (NDEA) that became one of the most successful legislative initiatives ever in support of our nation's great talent in science, technology, engineering, and mathematics (STEM). Passed in response to the Soviet Union's launch of Sputnik, the NDEA paved the way for the U.S. research and innovation enterprise to become best in the world. This support for our nation's fundamental research and great STEM talent catalyzed decades of U.S. global dominance in economic growth and national security.

Today, we face new geopolitical challenges and adversaries, in addition to the existential threat of climate change. While our scientists and engineers have continued to produce remarkable achievements, including the COVID-19 mRNA vaccine, our nation is losing its leadership in science and innovation. The stagnation of research funding has led many of our talented early career scientists to pursue careers outside of STEM, or even to pursue their research abroad. Foreign STEM talent that once flocked to our shores is increasingly looking elsewhere. Many companies across industry sectors are unable to find skilled workers to fill good, high-paying STEM jobs.

In this context of stagnancy and complacency, China and other competitors are doubling down on investments in science, innovation, and their own domestic STEM workforces. To be clear, we benefit immensely from global scientific expertise and from global collaborations, including with China. But in critical technologies such as artificial intelligence, quantum information sciences, biotechnology, and technologies that enable space exploration, ceding our leadership to other nations has manyfold consequences – for the competitiveness of U.S. companies, for the creation of good jobs in the U.S., for our national security, and even for the values that guide us. While technology alone will not solve our most pressing challenges, solutions to most of our

challenges will not be possible without advances in technology and support for all of our nation's STEM talent to pursue careers in research and innovation.

The CHIPS and Science Act provided only authorizations for our science programs. Now is the time to fund the agencies authorized in CHIPS and Science, including the National Science Foundation (NSF), the National Institute of Standards and Technology (NIST), and the Economic Development Agency (EDA), as well as the other CJS agencies that contribute to our global scientific leadership, the National Aeronautics and Space Administration (NASA) and the National Oceanic and Atmospheric Administration (NOAA). While the President's Budget Request does not fully fund NSF and NIST at the levels authorized in CHIPS and Science, the amounts proposed in the Request represent the minimum investment needed to realize the potential of CHIPS and Science.

National Science Foundation

Funding for the National Science Foundation (NSF) has increased steadily in recent years, reaching $9.88 billion in FY 2023, not including the $200 million provided through the CHIPS Act Workforce fund. We appreciate that you have worked hard to provide NSF with increases in recent years under significant budget constraints. Our nation's leadership in science and technology is increasingly threatened across nearly all fields of science and engineering, including artificial intelligence, advanced communications, quantum science, and engineering biology. Research funded by NSF constitutes the very foundation of our entire science and technology enterprise. In addition, our nation faces an increasing demand for workers with STEM skills, and NSF is the leader in advancing innovation in STEM education and nurturing the next generation of STEM talent at all levels.

More recently, with the creation of the new Technology, Innovation, and Partnerships (TIP) Directorate authorized in the CHIPS and Science Act of 2022, NSF is making bold new investments in use-inspired and translational research to ensure that research moves out of the lab to accelerate economic growth, strengthen national security, and improve the wellbeing of all Americans. NSF is also making critical investments in regional science and innovation through the TIP Directorate so that every region of the country has high-skilled, high-paying jobs and strong economic growth. While we must continue to support and grow the seed corn of fundamental research that NSF, in partnership with U.S. universities, has led the world in for 70 years, we must not miss the opportunity created in the CHIPS and Science Act for NSF to continue to transform itself to meet today's global challenges. If we do not commit to supporting the TIP Directorate as envisioned, we may be setting it up for failure.

The President's FY24 budget request for NSF is positive, but it falls short of what is needed to achieve the goals set forth in CHIPS and Science. Specifically, I urge you to support the Research and Related Activities directorate at a level of $10.5 billion, less than the $12 billion authorized in CHIPS and Science, but still an important downpayment on the promise of the Act. I also urge you to provide $2.0 billion for the STEM Education directorate. As we face

increasing competition for foreign talent from nations around the world, it is more important than ever that we invest in our own domestic talent. While our technology transfer laws, tax laws, and other policies matter, our science and innovation enterprise would not be the world's envy without the world's best researchers and innovators.

With respect to the remaining accounts at NSF, I support the President's FY24 budget request. In particular I would like to emphasize the importance of fully funding, at a minimum, the President's request for the Agency Operations and Management Account. NSF already operates with one of the lowest overhead costs in the entire Federal government. There is nothing more to squeeze out of the operations account while the rest of the agency continues to grow. Overall, I request an agency total of $13.3 billion in funding for FY24.

National Institute of Standards and Technology

The National Institute of Standards and Technology (NIST) supports U.S. innovation and competitiveness by advancing measurement science, standards, and technology. NIST and its many activities are critical to our economic and national security. The Administration's request, while a good start, in particular for NIST's construction account, does not do enough to address the needs and opportunities facing the agency as authorized in the CHIPS and Science Act. I urge you to support a total funding level for NIST of $1.937 billion.

The Scientific and Technical Research and Services (STRS) account funds NIST's laboratory research, including collaborative research with industry. While the Administration proposes a modest increase for this account in FY24, I urge you to fund STRS at $1.300 billion. While NIST can surely do more with the full funding authorized in CHIPS and Science, even an increase of $300 million over the President's request will help power billions of dollars in economic growth. Specifically, this funding will support NIST's critical work supporting the development of standards in trustworthy artificial intelligence, advanced communications, quantum information science, privacy and cybersecurity, and biotechnology. It will also make American communities safer and more resilient through NIST's work on wildland fire risk reduction, greenhouse gas measurement, forensic science, disaster resilience, and plastics recycling. Specifically, I urge you to fully fund the President's request of $7.56 million for NIST's work on wildfire and the wildland-urban interface. Finally, there is ever increasing urgency to support U.S. leadership in international standards development, especially in industries of the future. Therefore, I urge you to increase support for NIST to engage in international standards development and related activities as authorized by Section 10245 of the CHIPS and Science Act, including the creation of a capacity building pilot program that can support increased participation of U.S. small businesses and institutions of higher education in international standards processes.

NIST's Industrial Technology Services (ITS) account supports the Hollings Manufacturing Extension Partnership (MEP) and Manufacturing USA. As you well know, MEP has proven to be a successful model for federal-state partnerships with significant payoff in economic growth

and job creation across our nation. The Manufacturing USA network is coordinated through NIST and supports partnerships between companies, academia, and entrepreneurs to develop and deploy manufacturing technologies. The CHIPS and Science Act expanded these successful programs, including through the creation of a pilot program of expansion awards at MEP under Section 10251 and the creation of a National Supply Chain Database under Section 10253. I urge you to fund the ITS account at the request level of $375 million, which is only modestly lower than the authorized level for FY24.

Finally, I strongly support investing in NIST's construction account to modernize NIST's labs, many of which are aging or outdated. A 2023 report from the National Academies found that "deficient functionalities of NIST's facilities constitute a major threat to its mission performance and thereby, to our nation's economy, national security, and quality of life."1 The report finds that NIST's infrastructure challenges have materially affected agency operations. The report was released after the passage of the CHIPS and Science Act, which does not account for the scale of these challenges. The President's budget request rightfully calls to increase NIST's budget to $262 million. I strongly urge you to fund NIST's facilities and construction account at this level in addition to any external projects.

National Oceanic and Atmospheric Administration (NOAA)

At the time of writing this request, the detailed budget request for NOAA is not yet available to Congress. As such, I am limited in being able to specify NOAA programmatic funding priorities as Ranking Member of the Science, Space, and Technology Committee. Overall, I urge you, at a minimum, to fully fund the President's FY24 Budget Request of $6.8 billion for NOAA, an increase of $450.5 million from the FY23 enacted budget. There is a substantial and increasing demand from public and private stakeholders across the country for NOAA to continue delivering improved products and services, predictions of extreme weather events, and enhanced climate-ready information. This budget will help NOAA deliver on its mission of science, service, and stewardship.

In particular, I am supportive of the proposed increase to funding for the nation's weather and climate satellites. NOAA's environmental satellites are a key tool in forecasting weather, analyzing climate, and environmental monitoring. In fact, an overwhelming majority of data used in weather forecasting models comes from satellites. The proposed increase of $370 million will support developing the current and next generation of weather satellites to ensure continuity of the backbone of the nation's environmental data.

Finally, NOAA will need to ensure that its increasing volume of data is publicly available for decision making services. The PRECIP Act, which passed last year, requires NOAA to update the nation's precipitation frequency data as well as develop guidance and best practices with the

[1] https://www.nationalacademies.org/our-work/technical-assessment-of-the-capital-facility-needs-of-the-national-institute-of-standards-and-technology

probable maximum precipitation estimates. Updating the out-of-date precipitation data is critical for planning investments in the nation's homes, roads, bridges, and other infrastructure. NOAA must have adequate resources to collect, process, store, and disseminate valuable data including carrying out the requirements of the PRECIP Act.

Economic Development Administration

The Economic Development Agency (EDA) serves a unique role in supporting development and transformation of America's innovation and manufacturing ecosystems. That is why Congress created two new programs for EDA in the CHIPS and Science Act: the Regional Technology and Innovation Hubs program and the Recompete Pilot. I urge the Committee to fully fund the FY24 authorized level of $1.485 billion for the Regional Technology and Innovation Hubs. The Tech Hubs program will support the development of geographically diverse technology clusters across the country, creating high paying jobs, fostering innovative businesses, and supporting a new wave of domestic manufacturing. With equal enthusiasm, I urge the Committee to fund the Recompete Pilot program at the authorized level of $200 million, which reflects the Administration's budget request. This program will boost America's persistently distressed communities by providing flexible multiyear awards tailored to the specific needs of each community. By investing in local economies that have been left behind, we will ensure that all American communities can contribute to and benefit from American innovation. These programs received supplementary appropriations in the FY23 Omnibus. If not funded at the authorized levels, the Federal government's investments will fail to deliver on the goals of each program to invest in persistently distressed communities and cultivate regionals hubs of innovation and technology excellence in communities throughout our country.

I recognize that these are challenging levels of investment to achieve as you balance across so many competing priorities. However, it would be difficult for me to overstate what is at stake here if we fail to invest in the foundations of our innovation future. Continuing to rest on our 20th Century laurels is not an option. We already learned that lesson since the America COMPETES Act was authorized by Congress in 2007 and reauthorized in 2010, but was never funded. We urge you, as you develop the CJS Appropriation bill, to provide significant increases to the agencies that provide the scientific foundations for our economic competitiveness and our capacity to solve the pressing problems that confront us.

National Aeronautics and Space Administration (NASA)

In just the last year, NASA's accomplishments with the James Webb Space Telescope, the Artemis I integrated Space Launch System and Orion crew vehicle flight demonstration, and the first dedicated planetary defense mission, the Double Asteroid Redirect Test, are clear examples of NASA and the United States continuing to lead the world in discovery, exploration, aeronautics, and space technology. I am pleased that the Administration takes a solid step in

advancing the agency's inspiring missions in science, exploration, aeronautics, space technology, and STEM with its $27.2 billion request for FY 2024, a 7.1 percent increase over the FY 2023 enacted appropriation. I am especially pleased that the Administration has proposed increases for the Space Technology account, which develops cross-cutting technologies that enable mission capabilities and cost effectiveness.

As you consider the FY 2024 proposal for NASA, I urge you to consider the impacts of inflation (6.5 percent for calendar year 2022) and account for such impacts in appropriated levels. Given the extent of NASA's development efforts, which are particularly impacted by the rising costs of raw materials, and the economic, scientific, inspirational, technological, and geopolitical importance of the agency's work, it is essential that resources provided account for inflation.

Science. The FY 2024 request of $8.26 billion for the Science Mission Directorate, while a 6 percent increase over the FY 2023 enacted appropriation, proposes $54 million in cuts to the heliophysics account from the FY23 enacted level, pausing the development of a top heliophysics decadal survey mission. In addition, the FY 2024 proposal signals the potential for additional outyear budgetary needs for a Mars Sample Return, and budget pressures in the planetary account are leading to indefinite delays to multiple planetary missions. Further, the request leaves little opportunity to begin implementation of the highest priorities of the recently released Astronomy and Astrophysics and Planetary Science and Astrobiology decadal surveys. I urge you to provide increases for the Science Mission Directorate to restore proposed cuts from the FY 2023 enacted level to the heliophysics account, provide resources to ensure the continued development of the Geospace Dynamics Constellation (GDC) mission, and to initiate the Great Observatory Maturation Program (GOMAP).

Exploration. The historic milestone of the Artemis I flight demonstration sparked momentum in our nation's human exploration efforts. It is imperative that the United States continue to lead in human exploration of space, in cooperation with its partners, as we work to send humans back to the Moon in preparation for achieving the goal of being the first nation to send humans to Mars. The FY 2024 request of $7.9 billion for Deep Space Exploration Systems would fund, among other things, the development and production of Space Launch System vehicles to ensure their readiness for Artemis IV and subsequent Artemis missions. I urge you to provide funding for accounts under Exploration Systems that reflect adjustments for inflation, and that are sufficient to ensure the readiness of launch systems for Artemis IV and subsequent missions, and implementation of direction in the NASA Authorization Act of 2022, as enacted in the CHIPS and Science Act, to "plan for not fewer than 1 Space Launch System launch annually after the first successful crewed launch of Orion on the Space Launch System, with a goal of 2 Space Launch System launches annually, as soon as practicable." Such a cadence is also important, as directed in the Act, "to maintain critical human spaceflight production and operations skills necessary for the safety of human spaceflight activities in deep space."

Space Operations. The FY 2024 request of $4.53 billion for the Space Operations Mission Directorate includes a 6.7 percent increase over the FY 2023 enacted appropriation, essentially an inflationary increase. The FY 2024 request also proposes funding to initiate the development of a capability to safely deorbit the International Space Station following the end of its operations. I urge you to ensure that Space Operations is funded sufficiently to account for both inflationary impacts as well as the new deorbit vehicle development. In addition, to ensure that there is no gap in our human presence in low Earth orbit following the end of International Space Station operations, I request that you provide at least the level requested for International Space Station research, commercial low Earth orbit destinations, and to ensure a well-planned transition of NASA's International Space Station activities to future commercial low Earth orbit platforms.

Aeronautics. I support, at least full funding of the President's FY 2024 request of $995.8 million for the Aeronautics Research Mission Directorate to support continued United States leadership in the next generation of more sustainable airplanes. Other nations are significantly out-investing the United States in aeronautics research and development at orders of magnitude higher levels. To that end, I encourage you to provide no less than the President's request for efforts under the Sustainable Flight National Partnership, including the Electrified Powertrain Flight Demonstration, and to implement direction in the NASA Authorization Act of 2022 as enacted in the CHIPS and Science Act. I also request that you fully fund NASA's Advance Air Mobility projects, which have the potential to help the United States realize significant economic opportunities and societal benefits. In addition, NASA's aeronautics test facilities are essential for the nation's advances in aeronautics, space, and national security projects. The FY2024 request for Aeroscience Evaluation and Test Capabilities proposes flat funding over the 5-year budget runout. I respectfully request that you consider increases over the administration's proposal to account for inflation for the Aerosciences Evaluation and Test Capabilities account.

Sincerely,

Zoe Lofgren
Ranking Member

cc:

The Honorable Kay Granger
Chairwoman
Committee on Appropriations

The Honorable Rosa DeLauro
Ranking Member
Committee on Appropriations

The Honorable Frank Lucas
Chairman
Committee on Science, Space, and Technology