

**THE VIEWS AND ESTIMATES**  
**OF THE**  
**REPUBLICAN MEMBERS OF THE COMMITTEE ON SCIENCE, SPACE,**  
**AND TECHNOLOGY**  
**U.S. HOUSE OF REPRESENTATIVES**  
**FOR FISCAL YEAR 2021**

Science and technology are essential to America's prosperity. Basic research supported by the Federal government is foundational to our economy, our national security, and our way of life. Scientific research allows us to stay at the forefront of cybersecurity, medical treatments, agricultural production, and technological exports. America has long been the global leader in science and technology, but that leadership is under threat. China has made it an explicit goal to surpass the U.S. and become the world leader in critical technologies like quantum information science, artificial intelligence, and advanced manufacturing. It is projected that China has already surpassed the United States in total Research and Development (R&D) investment this year. By investing in our STEM workforce, world-class facilities, and the research needed to develop state-of-the-art technologies, we'll secure our R&D and drive progress.

The Republican members of the Committee on Science, Space, and Technology continue to develop legislation and policies to ensure that the United States remains the world's leader in R&D. In January, twelve Republican members of the Committee introduced H.R. 5685, the Securing American Leadership in Science and Technology Act of 2020. H.R. 5685 authorizes a doubling of basic research funding over the next ten years at the Department of Energy, the National Science Foundation, the National Institute of Standards and Technology, and the National Oceanic and Atmospheric Administration. The legislation also prioritizes investment in American infrastructure that is needed to maintain our world-class research facilities and supports an increase in key programs to grow the American STEM workforce.

H.R. 5685 creates a national science and technology strategy to direct a more strategic, whole-of-government planning process to establish national priorities with better coordination between agencies. It also improves the effectiveness of Federal R&D investments by reforming technology transfer and cutting the red tape that inhibits private sector and government partnerships.

Republican members of the Committee support the President's FY2021 budget request for Industries of the Future, including a commitment to double R&D spending in nondefense artificial intelligence (AI) and quantum information science (QIS) by 2022.

Science Committee Republicans also support reauthorizing other key Federal science agencies and programs, including the National Aeronautics and Space Administration (NASA), science and technology at the Department of Homeland Security, and research and development at the Department of Transportation.

### **Department of Energy (DOE)**

- The minority seeks to prioritize basic research and science as directed in P.L. 115-246, the Department of Energy Research and Innovation Act, which was signed into law in September 2018. Federal funding focused on the commercialization of energy technologies often competes with private sector funding, and rarely provides the best investment of taxpayer dollars. A more appropriate role for the Federal government is sponsoring basic scientific research that cannot be undertaken by industry, often carried out in universities and the DOE national labs.
- As proposed in H.R. 5685, the minority supports robust funding for the DOE Office of Science, prioritizing basic research in the physical sciences, including high performance computing, nuclear physics, high energy physics, fusion energy sciences, and investments in critical user facility upgrades and research infrastructure across the DOE national lab complex. The minority also supports passage of H.R. 4733, the Low-Radiation Research Act of 2019, which authorizes key Office of Science research into the health effects of low-dose radiation, basic research that is critical to the U.S. defense, medical, nuclear, and space exploration industries.
- The minority supports responsible funding for the DOE applied energy research programs, prioritizing early-stage research that cannot be undertaken by industry. This includes investing in user facilities and computing capabilities that facilitate the demonstration of technologies to improve the efficiency, affordability, and reliability of all forms of energy. The minority also supports the funding levels proposed in H.R. 4091, the ARPA-E Reauthorization Act of 2019, which provides key reforms and critical support for DOE's successful ARPA-E program. The ARPA-E program serves as a vital bridge between basic research and applied research at the Department.
- The minority recognizes that nuclear power is a vital, emissions-free energy source and seeks to prioritize advanced nuclear energy R&D in accordance with P.L. 115-248, the Nuclear Energy Innovation Capabilities Act of 2017, which was signed into law in September 2018. This legislation authorizes the construction of the Versatile Neutron Source user facility, and combines the strengths of the DOE national labs, universities, and the private sector with the establishment of the National Reactor Innovation Center. These are critical tools necessary to facilitate private sector development of advanced nuclear reactor technology, and the minority is committed to ensuring full implementation of this legislation.

### **Environmental Protection Agency (EPA) Science**

- EPA funding should be reflective of the Agency's mission of protecting human health and the environment. Office of Research and Development resources should be focused on meeting EPA program and regional office priorities to prevent waste and promote efficiency.
- The minority supports funding for the implementation of EPA's Per- and Polyfluoroalkyl substances (PFAS) Action Plan to coordinate and support national research, identification, and risk communication to address this class of emerging chemicals.

### **National Science Foundation (NSF)**

- The minority seeks to prioritize funding for research and related activities at NSF as proposed in H.R. 5685. NSF supports all fields of fundamental science and engineering, except for the medical sciences, in all 50 states through approximately 2,000 institutions. The minority supports NSF's efforts to promote interdisciplinary research across its research directorates through the "10 Big Ideas," which are high-priority areas that integrate multiple fields of science and engineering and create opportunities to partner with industry, private foundations, other Federal agencies and the education sector. The minority also supports the Administration's request for prioritizing investments at NSF for foundational research and education that will develop the Industries of the Future, including advanced manufacturing, advanced wireless, artificial intelligence, biotechnology, and quantum information science.
- The minority will continue to ensure that research conducted through NSF, and all agencies, is in the national interest. Throughout its history, the NSF has played an integral part in funding breakthrough discoveries in fields as diverse as mathematics, physics, chemistry, computer science, engineering, and biology. A defined "national interest" requirement and criteria, as part of the American Innovation and Competitiveness Act (P.L. 114-329), has gone a long way towards ensuring the grant-making process at NSF is transparent and accountable to the American public.

### **Science, Technology, Engineering, Mathematics and Computer Science (STEM) Education**

- To remain competitive in the evolving global market, the U.S. needs a workforce skilled in STEM. Over the next decade, the STEM shortage is anticipated to reach one million professionals, according to the Bureau of Labor Statistics.
- In 2018 the Administration released its 5-year STEM strategic plan, "Charting a Course for Success: America's Strategy for STEM Education." The three guiding objectives of the plan are to: (1) build strong foundations for STEM Literacy; (2) increase diversity, equity, and inclusion in STEM; and (3) prepare the STEM workforce of the future. The minority supports this strategic plan and the Federal investments necessary to carry out this strategy.

- The minority supports strategic increases in STEM workforce pipeline programs, as proposed in H.R. 5685, including the NSF Graduate Research Fellowship Program, Cybercorps, Noyce Teacher Scholarship Program, and the Advanced Technical Education Program.
- The Federal government invests more than \$4.3 billion into 255 different programs with the primary goal of growing the STEM workforce. Despite these investments, the number of students prepared for STEM degrees, pursuing STEM degrees, and staying in STEM careers continues to lag. While the minority believes these investments are of critical importance, it is also important to ensure they are not duplicative. It should be a priority for these agencies to improve the coordination of STEM education and workforce development activities across Federal agencies, including disseminating the latest discoveries on successful methods for teaching, learning, and facilitating equal access.

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

- The minority seeks to prioritize critical research for Industries of the Future at NIST, as well as standards engagement as proposed in H.R. 5685. NIST's mission is to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology. NIST also engages in international standards development, which has consequences for international trade and for the competitiveness of American industry. China has strategically been working to influence global standards.
- The minority supports prioritizing NIST's core lab capabilities in the Scientific and Technical Research and Services account to support the transformation of basic research into innovations and new technologies that are critical to America's industrial competitiveness, with a focus on emerging technology areas including quantum information science, cybersecurity, artificial intelligence and data science, the internet of things, engineering biology, and materials research.
- The minority also supports funding to address NIST's facility needs at its campuses in Gaithersburg, Maryland and Boulder, Colorado, including addressing \$750 million in maintenance backlog. Based on Department of Commerce standards, approximately 60 percent of NIST's facilities are rated in poor to critical condition. The minority has proposed a ten-year funding plan in H.R. 5685, as well as reforms, for addressing these facility needs.

### **National Aeronautics and Space Administration (NASA)**

- With President Trump's enactment of P.L. 115-10, the NASA Transition Authorization Act of 2017, the Committee reignited America's pioneering spirit for exploration of new frontiers and worlds through reinvigoration of our space science program with the entrepreneurial drive of commercial incentives and ideas.

- The minority will push for full implementation of the policy provisions in P.L. 115-10, the National Aeronautics and Space Administration Transition Authorization Act of 2017, as well as for funding to support American astronauts returning to the surface of the Moon by 2024, if technically feasible. The Administration's bold challenge is motivating NASA to focus its efforts on maintaining leadership in space exploration, which the minority fully supports.
- The minority is also cognizant of the counterproductive nature of authorizing funding for NASA that Appropriators are unable to match because of other statutory limitations. Doing so leaves NASA with unfunded obligations, fails to set national priorities, abdicates the responsibilities of an authorizing Committee, and sets NASA up for failure.
- NASA should maintain a balanced portfolio of programs, including Deep Space Exploration, Space Operations, Planetary Science, Astrophysics, Earth Science, Heliophysics, and Aeronautics, while also being conscientious of expending taxpayer funding.
- NASA should ensure that national programs like the Space Launch System, including the Exploration Upper Stage, Orion, and Exploration Ground Systems receive adequate funding to launch Artemis 1, 2, and 3 on schedule.
- NASA should fully fund the commercial cargo and crew programs and support commercial low Earth orbit and lunar activities to achieve NASA's exploration goals.

### **Department of Commerce**

- The Department of Commerce should elevate the Office of Space Commerce to the Office of the Secretary, where it is authorized, to enhance its stature in interagency deliberations, Department cooperation on space issues, and enable efficiencies through consolidation of activities. The Office should be funded at no less than \$5 million to expedite licensing of commercial remote sensing activities, as well as additional responsibilities directed in the House-passed American Space Commerce Free Enterprise Act (H.R. 2809, 115<sup>th</sup> Congress).

### **Federal Aviation Administration (FAA)**

- FAA R&D in FY2021 should reflect a balanced portfolio of activities that appropriately prioritizes aviation safety. FAA R&D should also assist in the certification of new technologies, particularly unmanned aerial systems (UAS), into the national airspace system (NAS).
- FAA's Office of Commercial Space Transportation should be adequately funded to license and permit commercial launch and reentry activities without delay. The Office should focus and prioritize its resources to execute these statutory responsibilities and not undertake additional work beyond those explicitly tasked by Congress.

### **National Oceanic and Atmospheric Association (NOAA)**

- As part of HR 5685, the minority supports doubling the Office of Oceanic and Atmospheric Research's budget for basic research over the course of the next ten years. To that end, the minority supports increasing funding for this office to \$655 million.
- The minority supports funding public safety NOAA Weather Research in the Office of Oceanic and Atmospheric Research at the \$131.5 million authorized in P.L. 115-25, the Weather Research and Forecasting Innovation Act of 2017, in Function 300. Protecting lives and protecting property must be NOAA's primary mission.
- The minority supports the continued implementation of the Earth Prediction Innovation Center (EPIC), authorized as part of P.L. 115-423, the National Integrated Drought Information System Reauthorization Act of 2018, at \$10 million. EPIC is intended to help NOAA reestablish American leadership in numerical weather prediction by partnering with the academic community and private sector to crowdsource data analysis.
- The minority asks that \$6 million be provided for the NOAA Commercial Weather Data Pilot project out of existing funding in the NOAA Procurement, Acquisition, and Construction account as authorized in P.L. 115-25.
- Improving weather observation data through the required use of observing system simulation experiments and next generation computing and modeling capabilities consistent with P.L. 115-25 is a priority for the minority. This new law provides NOAA with the flexibility to buy new, affordable, and potentially better sources of data from the private sector that have the power to make real improvements to our weather forecasting capabilities and creates a much-needed new \$20 million technology transfer initiative in NOAA's Office of Oceanic and Atmospheric Research.
- The minority supports funding the National Mesonet Program at \$25 million for the continued expansion of the program and integration of data into the National Weather Service's weather forecasting models.