

NATIONAL SCIENCE FOUNDATION

The agreement includes \$8,486,759,000 for the National Science Foundation (NSF).

Arecibo Observatory (AO).—The significant loss caused by the collapse of the 305-meter radio telescope at the Arecibo Observatory in Arecibo, Puerto Rico, is devastating. During its 57 years in operation, the telescope was an integral part of U.S. capabilities to advance scientific research and served as an iconic, beloved site for the residents of Puerto Rico and the scientific community. With this in mind and keeping safety as the number one priority, NSF is directed to report to the Committees within 60 days of enactment of this Act on the causes and extent of the damage, the plan to remove debris in a safe and environmentally sound way, the preservation of the associated AO facilities and surrounding areas, and the process for determining whether to establish comparable technology at the site, along with any associated cost estimates. NSF shall keep the Committees informed of any other activities related to this facility.

Innovation Corps.—The agreement includes \$40,000,000 for the Innovation Corps program. NSF is encouraged to facilitate greater participation in the program from academic institutions in States that have not previously received awards.

Student Diversity and Success Research.—The agreement adopts House language regarding Historically Black Colleges and Universities (HBCU) Student Diversity and Success Research and expands it to encourage NSF to support the listed activities at Hispanic Serving Institutions, Alaska Native Serving Institutions, Native-Hawaiian Serving Institutions, and Tribal Colleges and Universities and to direct NSF to include these types of institutions in the required report, in addition to HBCUs.

RESEARCH AND RELATED ACTIVITIES

The agreement includes \$6,909,769,000 for Research and Related Activities (R&RA) and no less than \$200,000,000 for EPSCoR.

Within the amount provided for R&RA, the agreement provides for the Facility Operation Transition activity at the budget request level, operation of the National Ecological Observatory Network at no less than the fiscal year 2020 level, and the Center for High Energy X-Ray Science at no less than the budget request level.

Maintaining Core Research.—NSF shall maintain its core research at levels not less than those provided in fiscal year 2020, including supporting existing observational networks and research infrastructure, including astronomy facilities, the academic research fleet, federally funded research and development centers and the national high-performance computing centers.

Daniel K. Inouye Solar Telescope (DKI-ST).—The agreement supports the budget request for the Daniel K. Inouye Solar Telescope (DKI-ST). NSF is encouraged to support the existing ancillary academic partnerships between NSF and DKI-ST.

Green Bank Observatory (GBO).—The agreement supports NSF’s effort to develop multi-agency plans at GBO and provides no less than the request level to support operations and maintenance at GBO through multi-agency plans, or directly through the Foundation.

Navigating the New Arctic.—The Committee urges NSF to formulate Arctic research programs leveraging expertise from regions accustomed to changing marine ecosystems. Specifically, NSF is encouraged to consider the impact of the opening of the two trans-Arctic sea routes and the proximity to deep U.S. ports.

Online Influence.—NSF is encouraged to consider additional research efforts that will help counter influence from foreign adversaries on social media platforms designed to influence U.S. perspectives and undermine confidence in U.S. elections and institutions. To the extent practicable, NSF should engage other Federal agencies to help identify areas of research that will provide insight that can mitigate adversarial online influence.

U.S. Neutron Monitor Network.—NSF is directed to immediately submit the U.S. Neutron Monitor Network plan required under Senate Report 116-127, as adopted in Public Law 116-93.

Study of Temperate Woodland and Alpine Ecosystems and Ecoregions.—NSF is expected to continue supporting research on unique mountain temperate woodland ecosystems and ecoregions, in order to better understand and sustain the health and vitality of mountain ecosystems.

Spectrum Innovation Initiative.—The Committee supports investments in the Spectrum Innovation Initiative.

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Water Contamination Research.—From fiscal year 2014 to present, NSF has obligated more than \$30,000,000 to research related to the water crisis in Flint, Michigan, or closely related subjects. NSF is encouraged to continue multi-institutional, multidisciplinary water-related research.

Rules of Life.—The agreement supports NSF's focus on Rules of Life funding of research, including in plant genomics, and directs NSF to continue to advance the ongoing plant genomics research program, further its work in crop-based genomics research, and to maintain a focus on research related to crops of economic importance.

Verification of the Origins of Rotation in Tornadoes Experiment-Southeast (VORTEX-SE).—NSF is encouraged to continue its cooperation with NOAA for the VORTEX-SE field campaign in the southeastern United States. NSF should look beyond its traditional research disciplines to utilize programs, co-funding opportunities, and to utilize collaborative research to better understand the fundamental natural processes of tornadoes and to improve models of these seasonal extreme events.

High-Performance Computing Planning.—NSF should invest in additional high-performance computational systems and renew and adequately resource its commitment to developing and supporting systems that facilitate tremendous leaps in computational simulation.

Intense, Ultrafast Lasers.—In 2018, the National Academy of Sciences found that the United States has lost its previous dominance in high-intensity lasers, which are critical to advance scientific discovery, future science facilities, and important applications in national security, industry, and medicine. NSF is encouraged to implement report recommendations and to make the necessary early stage investments in intense, ultrafast laser science and technology.

Marine Research.—NSF is to maintain current funding levels for marine research facilities. A plan shall be developed by NSF with the scientific community to continue researcher access to marine research facilities and to accept new research proposals.

Re-Engineering Plastic Textiles.—NSF is encouraged to take a comprehensive and coordinated approach to support research in plastics, microplastics, and microfibers to address the significant challenges on the aquatic environment, to human health, and in the transport and migration of materials, waste management, and development of alternative materials.

Coastlines and People.—NSF is encouraged to continue to advance research in coastal environmental viability and natural hazards in coastal regions, including the efforts of the Coastlines and People program.

Quantum Information Science.—The agreement includes funds up to the request levels for quantum information science research and from within this amount provides no less than \$160,000,000 for activities authorized under section 301 of the National Quantum Initiative Act and \$50,000,000 for National Quantum Information Science Research Centers, as authorized in section 302 of that Act.

Artificial Intelligence (AI).—This agreement fully funds AI related grants and interdisciplinary research initiatives across NSF at up to the fiscal year 2021 request level. In addition, the agreement reiterates House language to encourage NSF to continue its efforts in workforce development for AI and other emerging technologies, with focused outreach to community colleges, Historically Black Colleges and Universities, Hispanic Serving Institutions, Tribal Colleges and Universities and other Minority Serving Institutions.

Sustainable Chemistry Research.—NSF is encouraged to develop and implement a sustainable chemistry research and development program, as authorized by the America Competes Reauthorization Act of 2010 (Public Law 111–358). Additionally, NSF shall report to the Committees within 90 days after the enactment of this Act on its implementation plan for this program.

MAJOR RESEARCH EQUIPMENT AND FACILITIES CONSTRUCTION

The agreement includes \$241,000,000 for Major Research Equipment and Facilities Construction (MREFC), including funds at the requested levels for the continued construction of the Vera C. Rubin Observatory (previously known as the Large Synoptic Survey Telescope), the Antarctic Infrastructure Modernization for Science, and the High Luminosity-Large Hadron Collider Upgrade. The Government Accountability Office is directed to continue its annual reviews and semiannual updates of programs funded within MREFC and shall report to Congress on the status of large-scale NSF projects and activities based on its review of this information.

Mid-scale Research Infrastructure.—The agreement includes \$76,250,000 for Mid-scale research infrastructure. NSF is encouraged to award at least one mid-scale research infrastructure project led by an institution in an EPSCoR State.

Infrastructure Planning.—Under 42 U.S.C 18621, the NSF Director is required to prepare, and include as part of the Foundation's annual budget request to Congress, a plan for the proposed construction of, and repair and upgrades to, national research facilities. Under 42 U.S.C. 1862n-4, the Director, with the approval of the National Science Board, also develops a prioritized list of MREFC projects approved by the Board. The Board found in its 2030 Vision report that: “Providing research infrastructure across the range of scientific fields and at various scales will require field-based, agency-based, and interagency planning and execution to ensure that infrastructure investments are complementary and that America’s S&E infrastructure is globally competitive.” In lieu of House language regarding infrastructure planning, NSF and the Board are encouraged to engage in robust planning for and investments in the next generation of world class facilities, including any projects recommended by the upcoming Astrophysics decadal survey.

Buy American Provisions.—NSF is directed to follow prior year report language included in Senate Report 116-127 and adopted by Public Law 116-93 regarding Buy American provisions related to marine vessels and marine vessel components.

EDUCATION AND HUMAN RESOURCES

The agreement includes \$968,000,000 for Education and Human Resources, including no less than these amounts for the following programs: \$49,500,000 for Louis Stokes Alliance for Minority Participation; \$75,000,000 for the Advanced Technological Education program; \$36,500,000 for the Historically Black Colleges and Universities Undergraduate Program; \$16,500,000 for the Tribal Colleges and Universities Program; \$62,500,000 for Advancing Informal STEM Learning; \$8,000,000 for the Alliance for Graduate Education and the Professoriate; \$24,000,000 for Centers for Research Excellence in Science and Technology; and \$18,000,000 for Advancement of Women in Academic Science and Engineering Careers.

The agreement does not adopt the proposed funding reductions for the Improving Undergraduate STEM Education, Robert Noyce Scholarship Program, or the Graduate Research Fellowship, and instead includes the fiscal year 2020 funding levels for these programs.

Funding in this account is also used to implement the Building Blocks of STEM Act (Public Law) 116–102).

Hispanic-Serving Institutions (HSIs).—The agreement includes \$46,500,000 for the HSI program to build capacity at institutions of higher education that typically do not receive high levels of NSF funding.

CyberCorps: Scholarships for Service.—The agreement includes no less than \$60,000,000 for the CyberCorps: Scholarships for Service program, of which not less than \$7,500,000 should be used to continue work with community colleges that have been designated as a Center of Academic Excellence in Information Assurance 2-Year Education (CAE2Y) by the National Security Agency and the Department of Homeland Security, including through providing scholarships to students at CAE2Y institutions who will not transfer into a 4-year program, such as career-changers who possess 4-year degrees and veterans of the Armed Forces.

Cybersecurity Research.—In addition to the partnership efforts called for in the House report under this heading, NSF is urged to collaborate with National Initiative for Cybersecurity Education at NIST on efforts to develop cybersecurity skills in the workforce, especially in support of nontraditional or technical degree qualifications.

Bioprocessing.—NSF is encouraged to include training in bioprocessing within appropriate research areas as part of their educational efforts.

AGENCY OPERATIONS AND AWARD MANAGEMENT

The agreement includes \$345,640,000 for Agency Operations and Award Management.

Diversity and Inclusion.—NSF is encouraged to take steps to promote racial and cultural acceptance and diversity within its workforce. Within 180 days of enactment of this Act, NSF is directed to submit a report analyzing the current racial and cultural makeup of the Foundation; planned efforts to recruit, retain, and advance applicants and employees critical to promoting greater racial and cultural diversity, and the outcomes of these efforts; and any additional steps and recommendations planned to promote greater racial and cultural acceptance and diversity throughout the NSF workforce, including the development and analysis of metrics to evaluate success.

OFFICE OF THE NATIONAL SCIENCE BOARD

The agreement includes \$4,500,000 for the National Science Board.

OFFICE OF INSPECTOR GENERAL

The agreement includes \$17,850,000 for the Office of Inspector General.

ADMINISTRATIVE PROVISIONS

(INCLUDING TRANSFER OF FUNDS)

The agreement includes two administrative provisions. One allows limited transfers of funds among accounts. The other requires notification for disposal of certain assets.

(Amounts in thousands)

	FY 2020 Enacted	FY 2021 Request	Final B111	Final B111 vs Enacted	Final B111 vs Request
TITLE III - SCIENCE					
Office of Science and Technology Policy.....	5,544	5,000	5,544	---	+544
National Space Council.....	1,965	1,965	1,965	---	---
National Aeronautics and Space Administration					
Science.....	7,138,900	6,306,500	7,301,000	+162,100	+994,500
Aeronautics.....	783,900	819,000	828,700	+44,800	+9,700
Space Technology.....	1,100,000	1,578,300	1,100,000	---	-478,300
Exploration.....	6,017,600	6,761,700	6,555,400	+537,800	-2,206,300
Space Operations.....	4,140,200	4,187,300	3,988,200	-152,000	-199,100
Science, Technology, Engineering, and Mathematics					
Engagement.....	120,000	---	127,000	+7,000	+127,000
Safety, Security and Mission Services.....	2,913,300	3,009,900	2,936,500	+23,200	-73,400
Construction and environmental compliance and restoration.....	373,400	539,085	390,278	+16,878	-148,807
Office of Inspector General.....	41,700	44,200	44,200	+2,500	---
Total, National Aeronautics and Space Administration.....	22,629,000	25,245,985	23,271,278	+642,278	-1,974,707
National Science Foundation					
Research and related activities.....	6,666,200	6,142,020	6,838,769	+172,569	+696,749
Defense function.....	71,000	71,000	71,000	---	---
Subtotal.....	6,737,200	6,213,020	6,909,769	+172,569	+696,749

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COMMERCE, JUSTICE, SCIENCE, AND RELATED AGENCIES APPROPRIATIONS ACT, 2021

(Amounts in thousands)

	FY 2020 Enacted	FY 2021 Request	Final Bill	Final Bill vs Enacted	Final Bill vs Request
Major Research Equipment and Facilities Construction..	243,230	229,750	241,000	-2,230	+11,250
Education and Human Resources.....	940,000	930,930	968,000	+28,000	+37,070
Agency Operations and Award Management.....	336,900	345,840	345,840	+8,740	---
Office of the National Science Board.....	4,500	4,210	4,500	---	+290
Office of Inspector General.....	16,500	17,850	17,850	+1,350	---
Total, National Science Foundation.....	8,278,330	7,741,400	8,486,759	+208,429	+745,359
Total, Title III, Science.....	30,914,839	32,994,350	31,765,546	+850,707	-1,228,804

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