

the top 10 construction projects that are needed but unfunded in its fiscal year 2023 budget request, along with any unmet repairs that result from damage from wildfires, hurricanes, or other natural disasters.

#### OFFICE OF INSPECTOR GENERAL

The agreement includes \$45,300,000 for the Office of Inspector General.

#### ADMINISTRATIVE PROVISIONS

##### (INCLUDING TRANSFERS OF FUNDS)

NASA is directed to provide any notification under section 20144(h)(4) of title 52, United States Code, to the Committees.

The agreement permits various transfers of funds.

Not more than 20 percent or \$50,000,000, whichever is less, of the amounts made available in the current-year CECR appropriation may be applied to CECR projects funded under previous years' appropriation acts. Use of current-year funds under this provision shall be treated as a reprogramming of funds under section 505 of this Act and such funds shall not be available for obligation except in compliance with the procedures set forth in that section.

The agreement also includes a provision providing NASA the authority to combine amounts from one or more of its Science, Aeronautics, Space Technology, Exploration, and Space Operations appropriations with amounts from the STEM Engagement appropriation to jointly fund discrete projects or activities, through contracts, grants, or cooperative agreements, that serve these purposes. NASA is directed to provide notification of the Agency's intent to award a contract, grant, or cooperative agreement that would be jointly funded under this authority, no less than 15 days prior to award.

#### NATIONAL SCIENCE FOUNDATION

The agreement includes \$8,838,000,000 for the National Science Foundation (NSF). The agreement does not adopt the amounts provided in the prefatory matter of the House report and instead provides further direction regarding program levels cited within the appropriate NSF Divisions including Research and Related Activities, Major Research Equipment and Facilities Construction, Education and Human Resources, Agency Operations and Award Management, National Science Board, and Office of Inspector General.

**Broadening Participation.**—The agreement includes increases that are aimed to support Broadening Participation in STEM programs. Global leadership requires diverse ideas and NSF is encouraged to ensure the Foundation partners with communities with significant populations of underrepresented groups within STEM research and education as well as the STEM workforce.

**Graduate Research Fellowship Program (GRFP).**—In lieu of House language regarding the consolidation of GRFP, the bill includes language allowing the transfer of up to \$148,000,000 from Research and Related Activities to Education and Human Resources to permit NSF to consolidate the GRFP. The agreement also provides \$148,000,000 for GRFP within Education and Human Resources.

#### RESEARCH AND RELATED ACTIVITIES

The agreement includes \$7,159,400,000 for Research and Related Activities (R&RA).

**Technology, Innovation, and Partnerships.**—The agreement supports the new Directorate for Technology, Innovation, and Partnerships (TIP) within R&RA that builds upon and consolidates existing NSF programs. TIP serves as a cross-cutting platform to advance science and engineering research leading to breakthrough technologies, to find solutions to national and societal challenges, to

strengthen U.S. global competitiveness, and to provide training opportunities for the development of a diverse STEM workforce. NSF is encouraged to remember when funding projects within TIP that good ideas and high-quality research are not bound to certain geographical areas but exist across the country.

**Climate Science and Sustainability Research.**—The agreement provides no less than \$900,000,000 for climate science and sustainability research through the U.S. Global Change Research Program and Clean Energy Technology.

**Artificial Intelligence (AI).**—The agreement provides no less than \$636,000,000 for AI research. NSF is encouraged to increase the pipeline of students graduating with AI and data literacy through partnerships and cooperative agreements. 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.

**Quantum Information Science.**—The agreement includes \$220,000,000 for quantum information science research, including \$170,000,000 for activities authorized under section 301 of the National Quantum Initiative Act (Public Law 115-368) and \$50,000,000 for National Quantum Information Science Research Centers, as authorized in section 302 of Public Law 115-368.

**Historically Black Colleges and Universities Excellence in Research (HBCU-EiR).**—The agreement provides no less than \$22,000,000 for the HBCU-EiR program.

**Infrastructure Investments.**—With NSF's 10 Big Ideas as a focusing tool, the funding for the fundamental scientific disciplines should be maintained. Unless otherwise noted, within amounts provided, NSF is directed to allocate no less than the fiscal year 2021 enacted levels to maintain its core research levels, including support for existing scientific research laboratories, observational networks, and other research infrastructure assets, such as the astronomy assets, the current academic research fleet, federally-funded research and development centers, and the national high performance computing centers.

**Scientific Facilities and Instrumentation.**—The agreement supports the continuation of operations at the Daniel K. Inouye Solar Telescope (DKI-ST), the Gemini Observatory, the Very Long Baseline Array (VLBA) receivers, and the Center for High Energy X-Ray Science (CHEXS), and provides no less than the fiscal year 2021 enacted funding levels for these facilities.

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

**Established Program to Stimulate Competitive Research (EPSCoR).**—The agreement provides no less than \$215,000,000 for the EPSCoR States Program. Within the amount provided, no more than 5 percent shall be used for administration and other overhead costs. EPSCoR is designed to spur innovation and strengthen the research capabilities of institutions that are historically underserved by Federal research and development funding.

**Geography of Innovation.**—NSF is encouraged to review its large funding initiatives and center mechanisms to assess what tools need to be put in place to ensure emerging research institutions, institutions in EPSCoR States, and Minority Serving Institutions are not only participants, but lead-

ing these large NSF investments, in line with NSF's commitment to a "Geography of Innovation." NSF is directed to report to the Committees within 45 days of enactment of this Act on how the Foundation will assist these institutions to lead large funding initiatives and centers, including: Science and Technology Centers, Engineering Research Centers, Mid-Scale Research Infrastructure awards, Artificial Intelligence Centers, and other recurring or new center-level opportunities.

**Innovation Corps.**—The agreement provides no less than \$40,000,000 for the Innovation Corps program to build on the successes of its innovative public-private partnership model. NSF is encouraged to facilitate greater participation in the program from academic institutions in States that have not previously received awards.

**Regional Innovation Accelerators (RIA).**—The agreement supports the creation of the RIA program, and NSF is encouraged to award at least one RIA in fiscal year 2022. RIAs will be transformative for many communities across the country, especially for communities within EPSCoR States.

**Mid-scale Research Infrastructure.**—The agreement provides no less than the fiscal year 2021 enacted level for the mid-scale research instrumentation program. NSF is encouraged to make no fewer than two mid-scale awards to EPSCoR States.

**Harmful Algal Blooms.**—The agreement includes no less than the fiscal year 2021 level for harmful algal bloom research activities as described in the House report.

**Domestic Manufacturing.**—In lieu of House report language regarding Industrial Innovation and Partnerships, NSF is encouraged to continue to support meritorious research on the U.S. steel industry, including through TIP programs.

**International Ocean Discovery Program.**—The agreement provides \$48,000,000 for the International Ocean Discovery Program, equal to the fiscal year 2021 enacted level.

**Cybersecurity Workforce.**—NSF is encouraged to undertake a study to identify, compile, and analyze existing nationwide data and conduct survey research as necessary to better understand the national cyber workforce to build on to the NAS report titled, "Information Technology and the U.S. Workforce."

**Online Influence.**—NSF is encouraged to consider additional research efforts that will help counter influence from foreign adversaries on the Internet and social media platforms designed to influence U.S. perspectives, sow discord during times of pandemic and other emergencies, and undermine confidence in U.S. elections and institutions. To the extent practicable, NSF should foster collaboration among scientists from disparate scientific fields and engage other Federal agencies and NAS to help identify areas of research that will provide insight that can mitigate adversarial online influence, including by helping the public become more resilient to undue influence.

**Astronomy.**—The agreement recognizes the recent release by the National Academies of Sciences, Engineering, and Medicine (NAS) of the 2020 Decadal Survey in Astronomy and Astrophysics, "Pathways to Discovery in Astronomy and Astrophysics for the 2020s." The agreement notes that NSF is currently assessing how to best implement the recommendations included in the 2020 Decadal Survey. NSF is expected to include the appropriate levels of support for recommended current and future world-class scientific research facilities and instrumentation in subsequent budget requests. NSF is also expected to support a balanced portfolio of astronomy research grants by scientists and students engaged in ground-breaking research.

*Navigating the New Arctic.*—As NSF continues the Navigating the New Arctic program, the Foundation is encouraged to formulate research programs leveraging expertise from regions accustomed to adapting to changing marine ecosystems. NSF is encouraged to address Arctic change through dedicated research grants and coordination activities, expanded observation networks and other research infrastructure, and workforce training.

*Sustainable Chemistry Research.*—The agreement provides up to \$2,500,000 to establish the Sustainable Chemistry Basic Research program authorized under section 509 of the America COMPETES Reauthorization Act of 2010 (Public Law 111-358). In lieu of House report language, NSF shall report to the Committees within 90 days after the enactment of this Act on its implementation plan for this program. Additionally, NSF is encouraged to coordinate with OSTP to implement provisions in subtitle E of title II of Public Law 116-283.

*Spectrum Innovation Initiative.*—The agreement supports continued investment in the Spectrum Innovation Initiative.

*Understanding Rules of Life.*—The agreement supports NSF's focus on the Understanding Rules of Life research, including in plant genomics, and directs NSF to continue to advance the ongoing plant genomics research program, to 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 develop programs, identify co-funding opportunities, and utilize collaborative research to better understand the fundamental natural processes of tornadoes and to improve models of these seasonal extreme events.

*Intense, Ultrafast Lasers.*—NSF is encouraged to continue planning and making the early stage investments needed to advance ultrafast and high power laser technologies to maintain U.S. leadership and implement the recommendations from the Brightest Light Initiative Workshop report in 2019 and associated NAS study.

*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.

*Deepfakes.*—NSF is directed to implement the requirements included within the Identifying Outputs of Generative Adversarial Networks Act (Public Law 116-258).

*Disaster Research.*—The agreement supports research that enhances understanding of the fundamental processes underlying natural hazards and extreme events. NSF is encouraged to fund grants for meritorious research in fulfillment of the National Landslide Preparedness Act (Public Law 116-323).

#### MAJOR RESEARCH EQUIPMENT AND FACILITIES CONSTRUCTION

The agreement provides \$249,000,000 for Major Research Equipment and Facilities Construction (MREFC), including the requested levels for the continued construction of the Vera C. Rubin Observatory (previously known as the Large Synoptic Survey Telescope), the Antarctic Infrastructure Recapitalization (previously known as the Antarctic Infrastructure Modernization for

Science), Regional Class Research Vessels, 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.*—There is concern about the impact of current construction delays on NSF's planning for the construction and development of the next generation of competitive large-scale facilities to support NSF-funded science disciplines. As part of the planning process, NSF and the National Science Board are encouraged to develop a comprehensive and prioritized list of the next generation large-scale facilities requested by NSF-supported science disciplines to ensure that the United States maintains its scientific leadership.

#### EDUCATION AND HUMAN RESOURCES

The agreement includes \$1,006,000,000 for Education and Human Resources, including no less than: \$51,500,000 for Louis Stokes Alliance for Minority Participation; \$75,000,000 for the Advanced Technological Education program; \$90,000,000 for the Improving Undergraduate STEM Education (IUSE) Program; \$38,000,000 for the Historically Black Colleges and Universities Undergraduate Program; \$17,500,000 for the Tribal Colleges and Universities Program; \$48,500,000 for the IUSE Hispanic Serving Institutions program; \$65,000,000 for Advancing Informal STEM Learning; \$8,500,000 for the Alliance for Graduate Education and the Professoriate; \$25,000,000 for Centers for Research Excellence in Science and Technology; \$67,000,000 for the Robert Noyce Scholarship Program; \$21,500,000 for the NSF INCLUDES program; and \$18,500,000 for Advancement of Women in Academic Science and Engineering Careers.

*CyberCorps: Scholarships for Service.*—The agreement includes no less than \$63,000,000 for the CyberCorps: Scholarships for Service program, of which up to \$6,500,000 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.

*Hands-on and Experiential Learning Opportunities.*—Developing a robust, talented, and diverse homegrown workforce, particularly in the fields of STEM, is critical to the success of the U.S. innovation economy. NSF is encouraged to provide grants to support the development of hands-on learning opportunities in STEM education, including via after-school activities and innovative learning opportunities such as robotics competitions.

*Transformational Education Innovation and Translation.*—NSF is encouraged to collaborate with the Department of Education on transformational education innovation and

translation, including interventions grounded in scientific understanding to improve student outcomes and achievement. This may include instrumenting large-scale digital learning platforms to create a research infrastructure that drives continuous improvement in the use of the learning sciences. NSF should consider how to help address the learning loss associated with the COVID-19 pandemic, foster the benefits of distance learning and consider the learning needs of under-resourced and underrepresented students such as those in urban or rural communities.

#### AGENCY OPERATIONS AND AWARD MANAGEMENT

The agreement includes \$400,000,000 for Agency Operations and Award Management (AOAM).

*Full Administration Costs.*—In previous years, NSF has relied on transfer authority to cover the full cost of conducting its mission to advance basic science through research. In doing so, the true cost of agency administration was not readily apparent within each budget request. As the new TIP Directorate is being established, NSF has requested the opportunity to completely capture its administrative and workforce costs into a single location, without reliance on transfers. In support of this effort, the agreement provides a significant increase in AOAM funding to enable NSF to reduce its reliance on transfers during fiscal year 2022. NSF is encouraged to request sufficient AOAM funding in future budgets to further reduce its use of transfers for administrative purposes.

#### OFFICE OF THE NATIONAL SCIENCE BOARD

The agreement includes \$4,600,000 for the National Science Board.

#### OFFICE OF INSPECTOR GENERAL

The agreement includes \$19,000,000 for the Office of Inspector General.

#### ADMINISTRATIVE PROVISIONS

##### (INCLUDING TRANSFERS OF FUNDS)

The agreement includes three administrative provisions. Two allow limited transfers of funds among accounts, including a one-time transfer to consolidate the GRFP. One requires notification for the disposal of certain assets.

#### TITLE IV

##### RELATED AGENCIES

##### COMMISSION ON CIVIL RIGHTS

##### SALARIES AND EXPENSES

The agreement includes \$13,000,000 for the Commission on Civil Rights, of which \$1,000,000 is to be used separately to fund the Commission on Black Men and Boys. The agreement reiterates previous instruction for the Commission to provide a detailed spending plan for the funding provided for the Commission on Black Men and Boys within 45 days of enactment of this Act. In addition, the Commission shall include the Commission on Black Men and Boys as a separate line item in future fiscal year budget requests.

##### EQUAL EMPLOYMENT OPPORTUNITY COMMISSION

##### SALARIES AND EXPENSES

The agreement includes \$420,000,000 for the Equal Employment Opportunity Commission (EEOC).

*Summary of Equal Pay Data and Report.*—EEOC is directed to provide the results of its study analyzing summary pay information collected through the revised EEO I form for 2017 and 2018 immediately. EEOC is directed to publish a publicly available report describing the methodology and results of the analysis, identifying whether any operational needs would be created by a future

COMMERCE, JUSTICE, SCIENCE, AND RELATED AGENCIES APPROPRIATIONS ACT, 2022

(Amounts in thousands)

	FY 2021 Enacted	FY 2022 Request	Final Bill	Final Bill vs Enacted	Final Bill vs Request
<b>National Science Foundation</b>					
Research and related activities.....	6,838,769	8,062,710	7,082,400	+243,631	-980,310
Defense function.....	71,000	77,000	77,000	+6,000	---
Subtotal.....	6,909,769	8,139,710	7,159,400	+249,631	-980,310
Major Research Equipment and Facilities Construction..	241,000	249,000	249,000	+8,000	---
Education and Human Resources.....	968,000	1,287,270	1,006,000	+38,000	-281,270
Agency Operations and Award Management... ..	345,640	468,300	400,000	+54,360	-68,300
Office of the National Science Board.... .	4,500	4,600	4,600	+100	---
Office of Inspector General.....	17,850	20,420	19,000	+1,150	-1,420
Total, National Science Foundation.....	8,486,759	10,169,300	8,838,000	+351,241	-1,331,300
Total, Title III, Science.....	31,765,546	34,979,417	32,887,917	+1,122,371	-2,091,500