

**U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
SUBCOMMITTEE ON RESEARCH AND TECHNOLOGY**

HEARING CHARTER

*An Overview of the Budget Proposal for the National Science Foundation for
Fiscal Year 2017*

**Tuesday, March 22, 2016
2:00 p.m. - 4:00 p.m.
2318 Rayburn House Office Building**

Purpose

On Tuesday, March 22, 2016, the Subcommittee on Research and Technology will hold a hearing titled *An Overview of the Budget Proposal for the National Science Foundation for Fiscal Year 2017*. The purpose of the hearing is to review the Administration’s fiscal year 2017 (FY17) budget request for the National Science Foundation and to examine the Foundation’s implementation of accountability and transparency policies and other management issues.

Witnesses

- **The Honorable France Córdova**, Director, National Science Foundation
- **Dr. Dan E. Arvizu**, Chairman, National Science Board

Background

The National Science Foundation (NSF) is an independent federal agency established in 1950 “to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes”.¹

The Administration’s FY17 discretionary funding request for NSF is \$7.564 billion, a 1.3 percent increase of \$100.53 million over the 2016 enacted level of \$7.463 billion. The request for NSF also includes a proposal for an additional \$400 million in mandatory research funding.² The hearing will only be reviewing the discretionary budget request, reflected in the following charter.

¹ National Science Foundation, “NSF at a Glance”, Available at: <http://www.nsf.gov/about/glance.jsp>

² National Science Foundation, “FY2017 Budget Request to Congress,” Available at: <http://www.nsf.gov/about/budget/fy2017/>

National Science Foundation Overview

NSF is the primary source of federal funding for non-medical basic research. It supports the fundamental research that serves the national interest in areas such as national security, technology-driven economic growth, energy independence, health care, nanotechnology, and networking and information technology.

Through over 12,000 competitive awards per year, NSF supports approximately 377,000 scientists, engineers, educators and students at universities, laboratories and field sites. NSF is the funding source for over 24 percent of all federally supported basic research conducted at over 1,800 American colleges, universities, and other research institutions. These grants fund specific research proposals that have been judged the most promising by NSF's merit-review system. On average only one out of five proposals submitted to NSF is awarded funding.³

National Science Foundation (NSF) Budget

National Science Foundation (NSF) FY17 Budget Request⁴
(Dollars in millions)

Account	FY15 Actual	FY16 Estimate	FY17 Request Discretionary	FY17 Request Mandatory	Change Over FY2016 Estimate (Discretionary Only)	
					\$	%
Research and Related Activities (RRA)	6041.57	6033.65	6079.43	346.01	45.78	0.8
<i>Biological Sciences (BIO)</i>	736.19	744.17	745.73	44.79	1.56	0.2
<i>Computer and Info. Science and Engineering (CISE)</i>	932.98	935.82	938.43	56.37	2.61	0.3
<i>Engineering (ENG)*</i>	923.53	916.19	946.41	56.32	30.22	3.3
<i>Geosciences (GEO)</i>	1319.04	1318.54	1319.56	79.27	1.02	0.1
<i>Mathematical and Physical Sciences (MPS)</i>	1376.32	1349.15	1355.06	81.39	5.91	0.4
<i>Social, Behavioral, and Economic Sciences (SBE)</i>	276.19	272.20	272.41	16.36	0.21	0.1
<i>International Science and Engineering (OISE)</i>	48.46	49.10	49.10	2.95	-	-
<i>Integrative Activities (IA)</i>	427.46	447.06	451.30	8.56	4.24	0.9
<i>U.S. Arctic Research Commission</i>	1.41	1.43	1.43	-	-	-
Education and Human Resources (EHR)	886.33	880.00	898.87	53.99	18.87	2.1
Major Research Equipment & Facilities Construction (MREFC)	144.76	200.31	193.12	-	-7.19	-3.6
Agency Operations & Award Management	306.56	330.00	373.02	-	43.02	13.0
National Science Board (NSB)	4.15	4.37	4.38	-	0.01	0.2
Office of Inspector General (OIG)	14.60	15.16	15.20	-	0.04	0.3
Totals:	7397.97	7463.49	7564.02	400.00	100.53	1.3

*ENG FY17 request includes \$201.67m dedicated to SBIR/STTR as mandated by law, accounting for \$13.1m of the requested increase for FY17.

³ National Science Foundation, "FY2017 Budget Request to Congress Overview," Available at: http://www.nsf.gov/about/budget/fy2017/pdf/01_fy2017.pdf

⁴ National Science Foundation, "FY2017 Budget Request to Congress Summary Table," Available at: http://www.nsf.gov/about/budget/fy2017/pdf/03_fy2017.pdf

Research and Related Activities

The FY17 discretionary funding request for NSF Research and Related Activities (RR&A) is \$6.079 billion, a 0.8 percent increase of \$45.78 million above FY16. The RR&A account is divided into nine directorates and offices. The FY17 request includes directorate-wide support for research priorities in advanced manufacturing, clean energy technology, climate science, cyberinfrastructure, cybersecurity, resilience to extreme natural and human-made events, and cognitive science and neuroscience.⁵

RR&A Priorities Include:

Clean Energy R&D

The NSF's budget request for FY17 includes a major prioritization of Clean Energy R&D, with \$512.22 million in discretionary funding requested, a 37.9 percent increase over FY16. The request focuses on research in renewable and alternative energy sources for electricity and fuels; the collection, conversion, storage, and distribution of energy from diverse power sources; and energy materials, use, and efficiency.⁶

BRAIN Initiative (Understanding the Brain)

The FY17 budget request includes \$142 million, a -3.6 percent decrease from FY16 for Understanding the Brain, NSF's contribution to the Administration's Brain Initiative. The request includes continued development of the concept of a National Brain Observatory, a national research infrastructure for neuroscience to support collaborative and team science for achieving a comprehensive understanding of the brain in action and context.⁷

Secure and Trustworthy Cyberspace (SaTC)

The FY17 budget request includes \$149.75 million, a 15.4 percent increase, which aims to build the knowledge base in cybersecurity that enables discovery, learning and innovation, and leads to a more secure and trustworthy cyberspace. The Directorate for Computer and Information Science and Engineering (CISE) leads this NSF-wide effort, and is joined by the Education and Human Resources (EHR), Engineering (ENG), Mathematical and Physical Sciences (MPS), and Social, Behavioral, and Economic Sciences (SBE) directorates.⁸

⁵ National Science Foundation, "FY2017 Budget Request to Congress for Research and Related Activities," Available at: http://www.nsf.gov/about/budget/fy2017/pdf/16_fy2017.pdf

⁶ National Science Foundation, "FY2017 Budget Request to Congress Overview," Available at: http://www.nsf.gov/about/budget/fy2017/pdf/01_fy2017.pdf

⁷ Ibid.

⁸ Ibid.

Education and Human Resources

The FY17 discretionary request for Education and Human Resources (EHR) is \$898.87 million, a 2.1 percent increase over FY16. The Directorate for EHR provides the majority of NSF's funding for science, technology, engineering, and mathematics (STEM) education. EHR's proposed investments are in three core research areas: broadening STEM participation and institutional capacity, developing and improving STEM learning and learning environments, and developing a STEM professional workforce.⁹

EHR Priorities Include:

Cybersecurity Education

The Administration is requesting \$70 million for NSF's Cybercorps Scholarship for Service (SFS) program, a 40 percent increase over FY16. As authorized in the Cybersecurity Enhancement Act of 2014 (PL 113-274), SFS is a scholarship program to recruit and train the next generation of information technology professionals, industry control system security professionals and security managers. The request includes funding to begin development of a reserve corps program of SFS alumni to be available over the course of their careers to serve the federal government to help respond rapidly to cybersecurity challenges.¹⁰

Improving Undergraduate STEM Education

The FY17 request includes \$92.5 million for Improving Undergraduate STEM Education (IUSE), a 6.3 percent increase over FY16. Additional investments in IUSE by other research directorates of \$16.5 million, bringing the NSF total investment to \$109 million in FY17.¹¹

Major Research Equipment and Facilities Construction

The FY17 request for Major Research Equipment and Facilities Construction (MREFC) is \$193.12 million, a 3.6 percent decrease from FY16. The request includes funding to begin construction of one new project, the first of a three-year commitment to building two new Regional Class Research Vessel (RSRV) ships, and funding to continue construction of two ground-based telescope projects, the Daniel K. Inouye Solar Telescope (DKIST) and the Large Synoptic Survey Telescope (LSST).

No MREFC funds are requested for the National Ecological Observatory Network (NEON) in FY17, as the FY16 budget was the final year of construction funding for the six-year project. NEON operations and maintenance will continue to be funded through the Directorate for Biological Sciences in which the FY17 budget request includes \$65 million, a 47.6 percent

⁹ National Science Foundation, "FY2017 Budget Request to Congress for Education and Human Resources," Available at: http://www.nsf.gov/about/budget/fy2017/pdf/26_fy2017.pdf

¹⁰ Ibid.

¹¹ Ibid.

increase from the FY16 BIO estimate, as NEON construction nears completion and BIO assumes full operations and maintenance funding responsibility for NEON.¹²

MREFC Account Funding, by Project¹³

(Dollars in Millions)

Ongoing Projects	FY2015 Actual	FY2016 Estimate	FY2017 Request	Change Amount	Change Percent
Daniel K. Inouye Solar Telescope (Location: Maui, HI)	\$25.12	\$20.00	\$20.00	-	-
Large Synoptic Survey Telescope (Location: Chile)	\$79.64	\$99.67	\$67.12	-\$32.55	-33%
National Ecological Observatory Network (NEON) *this does not include the research funding for NEON under BIO)	\$40.00	\$80.64	-	-\$80.64	-100%
Regional Class Research Vessel (RSRV)	-	-	\$106.00	\$106.00	100%
Total, MREFC	\$144.76	200.31	193.12	-\$7.19	-3.6%

Agency Operations and Award Management

The FY17 request for NSF operations and award management is \$373.02 million, a 13 percent increase over FY16. Driving the increase is the ongoing equipment and technology costs associated with the headquarters relocation to Alexandria, Virginia, a 1.6 percent cost-of-living adjustment, and implementation of the Digital Accountability and Transparency Act (DATA Act).¹⁴

NSF Headquarters Relocation

The FY17 request includes \$43.29 million for expenses related to the NSF Headquarters relocation to Alexandria, Virginia, a 384.8 percent increase of \$34.36 million over FY16. In June 2013, GSA awarded a 15-year lease for NSF’s new headquarters. The FY17 request includes funding for management costs, technology costs, furniture, fixture, and equipment costs, and move costs to relocate NSF staff, furniture, equipment, and other materials to the new location. Included in the total is \$14.5 million for settlement costs to the lessor for the acceleration of substantial completion of the building by August 31, 2017. This amount includes landlord costs due to NSF delays, additional financing/opportunity costs, and 12 months of 2017 real estate taxes payable to the City of Alexandria – if an adjustment cannot be obtained from the City.¹⁵

¹² National Science Foundation, “FY2017 Budget Request to Congress for Major Research Equipment and Facilities Construction,” Available at: http://www.nsf.gov/about/budget/fy2017/pdf/27_fy2017.pdf

¹³ Ibid.

¹⁴ National Science Foundation, “FY2017 Budget Request to Congress for Operational Excellence,” Available at: http://www.nsf.gov/about/budget/fy2017/pdf/28_fy2017.pdf

¹⁵ Ibid.

National Science Board

The FY17 request includes \$4.38 million for the National Science Board, a 0.2 percent increase over FY16. The National Science Board, established in the NSF Act of 1950, has dual statutory responsibilities to: 1) provide national science policy advice to the President and Congress and 2) establish policies for NSF. The Board consists of 24 presidentially-appointed members plus the Director of NSF as an *ex officio* member.¹⁶

Office of the Inspector General

The FY17 request for the NSF Office of the Inspector General is \$15.2 million, 0.3 percent increase, which will enable OIG to carry out audits and investigations and maintain a workforce of about 68 FTE's.¹⁷

¹⁶ National Science Foundation, "FY2017 Budget Request to Congress for the National Science Board," Available at: http://www.nsf.gov/about/budget/fy2017/pdf/31_fy2017.pdf

¹⁷ National Science Foundation, "FY2017 Budget Request to Congress for the Office of Inspector General," Available at: http://www.nsf.gov/about/budget/fy2017/pdf/32_fy2017.pdf