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

HEARING CHARTER

An Overview of the Fiscal Year 2016 Budget Proposals for the National Science Foundation and National Institute of Standards and Technology for Fiscal Year 2016

Thursday, February 26, 2015
10:00 a.m. - 12:00 p.m.
2318 Rayburn House Office Building

1. Purpose

On Thursday, February 26, 2015, the Subcommittee on Research and Technology will review the Administration's fiscal year 2016 (FY16) budget request for the National Science Foundation and National Institute of Standards and Technology.

2. Witnesses

The Honorable France Córdova, Director, National Science Foundation

The Honorable Dan Arvizu, Chairman, National Science Board

Dr. Willie E. May, Acting Director, National Institute of Standards and Technology

3. Hearing Overview

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] This hearing will examine the Foundation's funding priorities for FY16. The NSF budget request for FY16 is $7.72 billion, a 5.2 percent increase over the 2015 enacted level of $7.34 billion. NSF is the funding source for over 24 percent of all federally-supported basic research conducted at approximately 2,000 American colleges, universities, and other research institutions.[2]

The National Institute of Standards and Technology (NIST) is a non-regulatory science agency within the Department of Commerce. The Institute's mission is to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve our quality of life. By working closely alongside industry, NIST is recognized as a provider of high-quality information utilized

[1] https://www.nsf.gov/about/history/legislation.pdf

[2] http://www.nsf.gov/news/news_summ.jsp?cntn_id=100595

by the private sector. This hearing will also examine NIST's funding priorities for FY16. The President's budget request for the National Institute of Standards and Technology (NIST) is $1.12 billion, an increase of $255.8 million (29.6%) over FY15.

National Science Foundation (NSF) Overview

The National Science Foundation (NSF) is the primary source of federal funding for non-medical basic research. The NSF is the major source of federal funding for many scientific fields like mathematics, computer science, and the social sciences. It supports the fundamental research that ultimately serve as the foundation for progress in nationally significant areas such as national security, technology-driven economic growth, energy independence, health care, nanotechnology, and networking and information technology.

Through over 11,000 competitive awards per year, NSF supports an average of 320,900 scientists, engineers, educators and students at universities, laboratories and field sites all over the U.S. and throughout the world. These grants fund specific research proposals that have been judged the most promising by NSF's merit-review system. Approximately, only one out of five proposals submitted to NSF are awarded funding.[3]

National Science Foundation (NSF) Spending

(dollars in millions)

Account	FY14 Actual	FY15 Estimate	FY16 Request	Change Over FY2015 Estimate	
				$	%
Research and Related Activities (RRA)	**5775.32**	**5933.65**	**6186.30**	**252.66**	**4.3**
Biological Sciences (BIO)	*720.84*	*731.03*	*747.92*	*16.89*	*2.3*
Computer and Info. Science and Engineering (CISE)	*892.60*	*921.73*	*954.41*	*32.68*	*3.5*
Engineering (ENG)	*833.12*	*892.31*	*949.22*	*56.91*	*6.4*
Geosciences (GEO)	*1321.32*	*1304.39*	*1365.41*	*61.02*	*4.7*
Mathematical and Physical Sciences (MSP)	*1267.86*	*1326.72*	*1366.23*	*29.51*	*2.2*
Social, Behavioral, and Economic Sciences (SBE)	*256.84*	*272.20*	*291.46*	*19.26*	*7.1*
International Science and Engineering (OISE)	*48.31*	*48.52*	*51.02*	*2.5*	*5.2*
Integrative Activities	*433.12*	*425.34*	*459.15*	*33.81*	*7.9*
U.S. Arctic Research Commission	*1.30*	*1.41*	*1.48*	*0.07*	*5.0*
Education and Human Resources (EHR)	**832.02**	**866.00**	**962.57**	**96.57**	**11.2**
Major Research Equipment & Facilities Construction (MREFC)	**200.00**	**200.76**	**200.31**	**-0.45**	**-0.2**
Agency Operations & Award Management	**305.95**	**325.00**	**354.84**	**29.84**	**9.2**
National Science Board (NSB)	**4.25**	**4.37**	**4.37**	**-**	**-**
Office of Inspector General (OIG)	**13.84**	**14.43**	**15.16**	**0.73**	**5.1**
Totals:	**7131.38**	**7344.21**	**7723.55**	**379.34**	**5.2**

[3] http://www.nsf.gov/nsb/publications/2014/nsb1432.pdf

National Science Foundation (NSF) Budget Summary[4]

The FY16 budget request for NSF is $7.724 billion, an increase of 5.2 percent, or $379.34 million, over the FY15 enacted level. The budget for NSF is divided into three major accounts: Research and Related Activities, Education and Human Resources, and Major Research Equipment and Facilities Construction. It also includes funding requests for Agency Operations and Award Management, the National Science Board, and the Office of Inspector General.

In the NSF's FY16 budget presentation provided to the Committee, the NSF identified four new priority investments and eight ongoing priorities:

New NSF-wide priorities are:
1) Understanding the Brain, encompassing new and ongoing investments as part of the Administration's Brain Research through Advancing Innovation and Neurotechnologies (BRAIN) Initiative;
2) Risk and Resilience, aims to improve predictability, risk assessment, and improve resilience to extreme natural and manmade events;
3) Innovations at the Nexus of Food, Energy, and Water Systems (INFEWS); and
4) Inclusion across the Nation of Communities of Learners that have been Underrepresented for Diversity in Engineering and Science (INCLUDES)

Ongoing NSF-wide priorities are:
1) Clean Energy Technology;
2) Cyber-enabled Materials, Manufacturing, and Smart Systems;
3) Cyberinfrastructure Framework for 21st Century Science, Engineering, and Education;
4) Innovation Corps;
5) NSF Research Traineeship;
6) Research at the Interface of Biological, Mathematical, and Physical Sciences;
7) Science, engineering, and Education for Sustainability; and
8) Secure and Trustworthy Cyberspace

The NSF has also highlighted its plan to invest $200.3 million in major research equipment and facilities construction (MREFC), which includes ongoing funding for construction of the Inouye Solar Telescope in Hawaii, the Large Synoptic Survey Telescope in Chile, and the National Ecological Observatory Network (NEON) of field sites across the United States.

NSF's request for funding of STEM education activities remains centered in the Directorate for Education and Human Resources (EHR). The Administration is seeking an 11 percent, or $96.57 million, increase for the Directorate. STEM learning and learning environments, broadening participation and capacity in STEM, and the STEM professional workforce are three areas of focus for EHR.

[4] http://www.nsf.gov/about/budget/fy2016/index.jsp

The request also includes $30.77 million for expenses related to the NSF Headquarters relocation to Alexandria, Virginia, an 83 percent increase of $13.96 million (83%) over FY15. Leases for the current facility expired in 2013, and has been extended until 2017.

National Institute of Standards and Technology (NIST) Overview

The National Institute of Standards and Technology (NIST) was originally founded in 1901 as the National Bureau of Standards. A non-regulatory agency within the Department of Commerce, NIST works to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology. By working closely alongside industry, NIST has become recognized as a provider of high-quality information utilized by the private sector.

NIST operates two main research laboratories in Gaithersburg, Maryland, and Boulder, Colorado. NIST employs nearly 3,000 scientists, engineers, technicians, and support administrative personnel. NIST hosts about 2,700 associates and facility users from academia, industry, and other government agencies each year. [5] NIST Laboratories conduct research that advances the nation's technology infrastructure and helps U.S. companies continually improve products and services.

NIST utilizes several programs to carry out its mission. The Hollings Manufacturing Extension Partnership is a nationwide network of local centers offering technical and business assistance to smaller manufacturers to help them create and retain jobs, increase profits, and save time and money. NIST partners with 1,300 manufacturing specialists and staff at more than 400 MEP locations around the country. The Advanced Manufacturing Technology Consortia program is intended to establish new or strengthen existing industry-driven consortia that address high-priority research challenges impeding the growth of advanced manufacturing in the United States. Finally, in December 2014 Congress authorized the Network for Manufacturing Innovation through the *Revitalize American Manufacturing and Innovation Act* (RAMI) to improve the competitiveness of U.S. manufacturing and increase the production of goods manufactured within the U.S.

[5] http://www.nist.gov/public_affairs/general_information.cfm

National Institute for Standards and Technology (NIST) Spending

(dollars in millions)

Account	FY14 Actual	FY15 Enacted	FY16 Request	Change Over FY15 Enacted	
				$	%
Scientific & Technical Research and Services (STRS)	**651.0**	**675.5**	**754.7**	**79.2**	**12**
Construction of Research Facilities (CRF)	**56.0**	**50.3**	**59.0**	**8.7**	**17**
Industrial Technology Services (ITS)	**143.0**	**138.1**	**306.0**	**167.9**	**122**
Manufacturing Extension Partnership (MEP)	*128.0*	*130.0*	*141.0*	*11*	*8*
Advanced Manufacturing Technology Consortia (AMTech)	*15.0*	*8.1*	*15.0*	*6.9*	*85*
National Network for Manufacturing Innovation	*-*	*-*	*150.0*	*150.0*	*100.0*
Totals:	**850.0**	**863.9**	**1,119.7**	**255.8**	**30**

National Institute of Standards and Technology (NIST) Budget Summary[6]

The President's FY16 budget request for NIST is $1.12 billion, an increase of $255.8 million (29.6%) over FY15.

Scientific and Technical Research Services

The FY16 Budget Request for NIST's Scientific and Technical Research Services (STRS) is $754.7 million, an increase of nearly $80 million from FY15 enacted levels. STRS includes NIST's laboratory programs, the National Measurement and Standards Labs and user facilities would both receive increased funding through the President's request. The Strategic and Emerging Research Initiative fund and postdoctoral research associates program would both be cut in the request. The request includes increases for work conducted on the materials genome initiative, in addressing radio spectrum interference issues, strengthening cryptography, advanced sensing for manufacturing, cyber physical systems and quantum-based sensors and measurements.

[6] http://www.osec.doc.gov/bmi/budget/FY16BIB/EntireDocument-WebVersionWithCharts.pdf

Construction of Research Facilities

The FY16 Budget Request for NIST's Construction of Research Facilities (CRF) is $59 million, an increase of nearly $9 million from FY15 enacted levels. The FY16 request would fund the next phase of planned multiyear renovations.

Industrial Technology Services

The FY16 Budget Request for NIST's Industrial Technology Services (ITS) is $306 million, an increase over $167 million or nearly 122 percent from FY15 enacted levels. The request includes $141 million for NIST's Manufacturing Extension Partnership (MEP), an increase of $8 million, and $150 million for the newly authorized Network for Manufacturing Innovation. The *Revitalize American Manufacturing and Innovation Act* (RAMI) was signed into law last December and authorized NIST to use not more than $5 million annually for 10 years for the Network for Manufacturing Innovation. RAMI also authorized $250 million over 10 years from the Energy Efficiency and Renewable Energy appropriation account to pay for the bulk of program costs. The NIST request also includes $15 million for the Advanced Manufacturing Technology program (AMTech), an increase of over $6 million.