NATIONAL SCIENCE FOUNDATION

Funding Highlights:

- Provides $7.8 billion for the National Science Foundation, an increase of 13 percent above the 2010 enacted level. Investments are made in areas that contribute to the President's Plan for Science and Innovation. Savings are also created by reducing funding for low-performing and lower-priority education and research programs.
- Demonstrates the Administration's commitment to research and development as a driver of economic growth, consistent with the President's plan to double funding for key basic research agencies.
- Fosters the development of a clean energy economy by providing $998 million for a cross-agency sustainability research effort focused on renewable energy technologies and complex environmental- and climate-system processes.
- Supports job creation in advanced manufacturing and emerging technologies with significant increases for multidisciplinary research targeted at next-generation computer chips, wireless communications, and robotics technologies.
- Invests in the growth of America's science and technology workforce with $20 million for recruiting and retaining undergraduate students from under-represented groups.
- Invests in the next generation of math and science teachers with a new $20 million research and development program aimed at improving the preparation and professional development of future educators in these fields.
- Builds first-of-a-kind distributed research facilities to continuously monitor the Nation's environment and oceans.

The National Science Foundation (NSF) is the key Federal grant-making agency responsible for supporting the full breadth of non-biomedical science and technology research at the Nation's universities and colleges. NSF accounts for approximately 20 percent of all federally-supported basic research conducted by academic institutions, and for approximately 40 percent of federally-supported non-biomedical university basic research. NSF's research programs and high-tech workforce development programs help drive future economic growth, global competitiveness and the creation of high-wage jobs for American workers. NSF is also a primary contributor

implementing the President's Plan for Science and Innovation. To support this critical mission as the Nation's economy grows, the President's 2012 Budget provides $7.8 billion, an increase of 13 percent above the 2010 enacted level. In keeping with the Administration's efforts to reduce costs wherever possible, funding has been eliminated or reduced for lower priority education and research programs that achieved their original goals, showed mixed results, or did not align well with NSF's core mission responsibilities.

Invests in American Competitiveness

Supports the Development of a Clean Energy Economy. The Administration proposes $998 million for the second year of a cross-agency Science, Engineering and Education for Sustainability initiative that will take an integrated approach to increasing U.S. energy independence, enhancing environmental stewardship, reducing energy and carbon intensity, and generating sustained economic growth. In conjunction with this initiative, the Administration proposes $576 million, an increase of $209 million over the 2010 enacted level, for research—such as nanotechnology and biotechnology—that will lead to breakthroughs in the clean energy technologies of the future.

Lays the Groundwork for the Industries and Jobs of the Future and a Renaissance in American Manufacturing. The Administration proposes significant increases for research leading to new advanced manufacturing technologies and the most promising fields likely to create new industries, businesses, and high quality jobs. Specifically, the Administration proposes $35 million for a nanotechnology manufacturing initiative, $30 million in next-generation robotics technologies, and $96 million for an interdisciplinary program aimed at eventually replacing current computer chip technologies. All three of these initiatives involve multiple agencies and critical partnerships with the private sector. The Administration also proposes an additional $87 million in advanced manufacturing activities, including expanded university-industry research partnerships and regional innovation ecosystems, clean energy manufacturing research, and new research at the intersection of biology, the physical sciences, and engineering. The Administration also proposes $117 million for "cyberinfrastructure" activities that will accelerate the pace of discovery in all research disciplines, and $12 million for a new program that will fund a suite of activities that promote greater interdisciplinary research. Finally, the Administration proposes to allocate spectrum auction receipts from the Wireless Innovation Fund ($150 million in 2012 and $1 billion over five years) to NSF for targeted research on experimental wireless technology testbeds, more flexible and efficient use of the radio spectrum, and cyber-physical systems such as wireless sensor networks for smart buildings, roads, and bridges.

Builds Cutting-Edge Research Facilities to Study the Nation's Environment and Oceans. The richness and diversity of America's ecosystem and the oceans that flank America's coasts have been a critical part of the Nation's economy and growth throughout history. Accordingly, the Administration proposes $88 million for the second year of construction of the National Ecological Observatory Network (NEON). NEON will collect data across the United States on the impacts of climate change, land use change, and invasive species on natural resources and biodiversity. The Administration also proposes $103 million for the fourth year of construction of the Ocean Observatories Initiative (OOI). OOI will consist of an integrated network of deep-sea buoys, regional cabled nodes on the seafloor, and coastal observatories that will provide continuous, interactive access to the ocean.

Broadens Participation of Those Studying Science and Technology. Science and technology skills are increasingly critical to getting high-wage jobs. To broaden access to science and technology educational opportunities, the Administration proposes $20 million for an overarching, comprehensive science and technology workforce program to engage undergraduates from historically unrepresented groups in these fields, including students at Hispanic-serving institutions. In

addition, this effort will support initiatives to better retain these students through their entry into the high-tech workforce.

Improves the Preparation and Continuing Development of Math and Science Teachers. The Administration proposes $40 million to launch a new teacher-training research and development program, with $20 million for K-12 Teachers and $20 million for Undergraduate Teachers.

- *K-12 STEM Teachers.* The Teacher Learning for the Future program, drawing resources from several existing NSF teacher-focused programs, will fund new lines of research and development needed for the rapid improvement of the preparation and continued professional learning of the math and science teachers of tomorrow. In cooperation with the Department of Education, the program will fund innovative efforts that design, develop, implement, and test new teacher-training programs and fund new lines of research and development needed for the rapid improvement of the preparation and continued professional learning of the math and science teachers of tomorrow.

- *Undergraduate STEM Teachers.* This new companion program will transform the way science, engineering, and math is taught to undergraduate students. Competitive proposals will target the teaching of all undergraduate courses and the teaching practices of all faculty members in a department for all, or most, of the relevant departments at an institution. This will build on past NSF work demonstrating improved instructional methods for individual teachers and courses. This program will support research on how to achieve widespread sustainable implementation of improved STEM undergraduate teaching practices and student outcomes at major universities, particularly for future K-12 STEM teachers, as well as providing demonstration models.

Spends Research Dollars More Wisely

Reduces and Terminates Low-Impact Research and Science Education. NSF has long operated with a relatively low administrative overhead, but the Administration proposes to use technology solutions and streamlined procurements to achieve ever greater administrative efficiencies including increased use of videoconferencing in lieu of travel, pooled supply purchases, and a reduction in support service contracts. In addition to these changes to agency operations, the Administration proposes to terminate a number of education programs and research facilities that have either fulfilled their original purpose, failed to demonstrate progress toward achieving their purpose, or do not fit within the Foundation's core competencies. The Administration proposes to repurpose the savings from these administrative efficiencies and low-priority program terminations to provide increases for high priority areas of basic research, innovation, workforce development and science education.

National Science Foundation
(In millions of dollars)

	Actual 2010	Estimate 2011	Estimate 2012
Spending			
Discretionary Budget Authority:			
Research and Related Activities	5,564		6,254
Education and Human Resources	873		911
Major Research Equipment and Facilities Construction	117		225
Agency Operations and Award Management	300		358
Office of the Inspector General	14		15
Office of the National Science Board	5		5
Total, Discretionary budget authority	6,873	7,424	7,768
Total, Discretionary outlays	6,607	8,415	7,626
Mandatory Outlays:			
Legislative proposal, Wireless Innovation Fund	—	—	150
H-1B Fee Programs	114	155	132
All other	-2	32	-2
Total, Mandatory outlays	112	187	280
Total, Outlays	6,719	8,602	7,906