

NATIONAL SCIENCE FOUNDATION

Funding Highlights:

- Provides \$7 billion for the National Science Foundation, a 16-percent increase over the 2008 level, as part of the President's Plan for Science and Innovation.
- Increases support for graduate research fellowships and for early-career researchers.
- Increases support for the education of technicians in the high-technology fields that drive the Nation's economy.
- Encourages more novel high-risk, high-reward research proposals.
- Increases support for critical research priorities in global climate change.

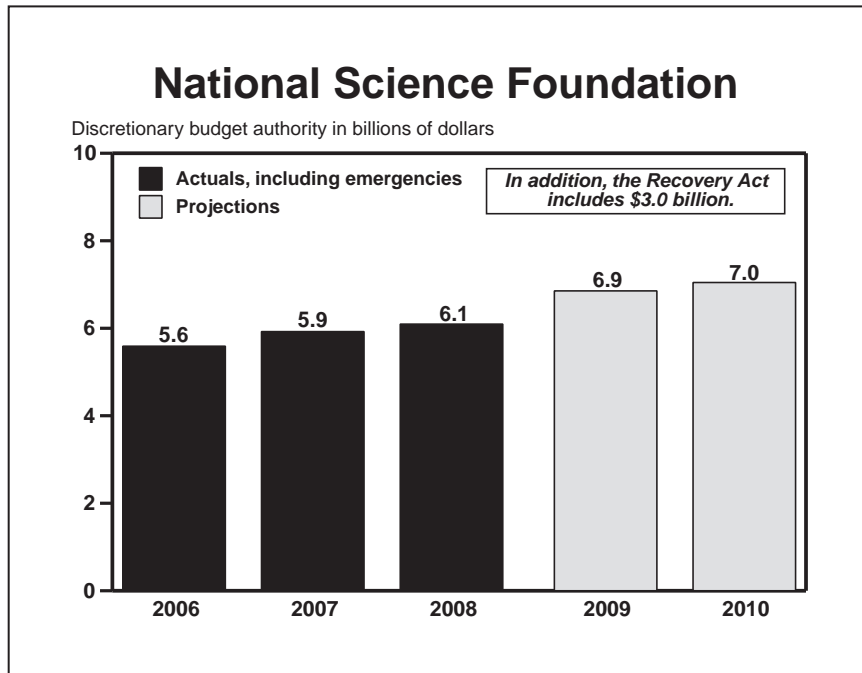
Invests in the Sciences. Investments in science and technology foster economic growth, create millions of high-tech, high-wage jobs that allow American workers to lead the global economy, improve the quality of life for all Americans, and strengthen our national security. For these reasons, the Budget doubles funding for basic research over 10 years, beginning with \$3 billion for the National Science Foundation (NSF) in the American Recovery and Reinvestment Act of 2009 and a 2010 Budget that increases NSF funding by \$950 million over 2008.

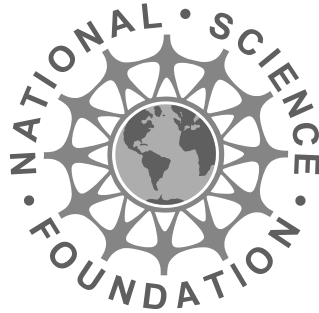
Supports Researchers at the Beginning of Their Careers. Ensuring America's economic competitiveness requires that we develop the future scientific and technical workforce for our universities, national labs, and companies. To help accomplish these goals, the Budget provides substantial increases for NSF's prestigious Graduate Research Fellowship and Faculty Early Career Development programs.

Strengthens the Education of Technicians in High-Technology Fields. The Budget increases support for the Advanced Technological Education program, which focuses on two-year colleges and supports partnerships between academic institutions and employers to promote improvement in the education of science and engineering technicians.

Encourages Promising High-Risk Research. The Budget increases support for promising, but exploratory and high-risk research proposals that could fundamentally alter our understanding of nature, revolutionize fields of science, and lead to radically new technologies.

Makes Climate Change Research and Education a Priority. The Budget supports research to improve our ability to predict future environmental conditions and to develop strategies for responding to global environmental change. The Budget establishes a climate change education program to help develop the next generation of environmentally engaged scientists and engineers.





NATIONAL SCIENCE FOUNDATION

Funding Highlights:

- Provides \$7.4 billion for the National Science Foundation, an 8 percent increase over the 2010 enacted level, as part of the President's Plan for Science and Innovation.
- Drives the creation of the industries and jobs of the future by doubling funding for multidisciplinary research targeted at next-generation information and biological technologies.
- Provides \$19 million in graduate and undergraduate fellowships and scholarships for a joint initiative with the Department of Energy to inspire tens of thousands of American students to pursue careers in science, engineering, and entrepreneurship related to clean energy.
- Creates a new \$766 million, cross-agency sustainability research effort focused on renewable energy technologies and complex environmental- and climate-system processes.
- Increases funding by 14 percent for a new consolidated program aimed at building the science and technology workforce by recruiting and retaining undergraduate students from under-represented groups.

The National Science Foundation (NSF) is the key Federal agency responsible for supporting the full breadth of non-biomedical science and technology research at the Nation's universities and colleges. This basic research and the agency's high-tech workforce development programs help drive future economic growth and the creation of high-wage jobs for American workers. The Budget fully funds the President's Plan for Science and Innovation by providing NSF with \$552 million over the 2010 enacted level, and maintains the Administration's commitment to doubling funding for key basic research agencies.

Lays the Groundwork for the Industries and Jobs of the Future. The Budget doubles funding to \$90 million for basic research aimed at creating a future bio-economy by enhancing our ability to design biological systems, and

starting the next revolution in computing by designing new materials. The Budget also supports advanced manufacturing technologies by funding research on nano-manufacturing and cyber-physical systems such as automated traffic control and zero-net energy buildings.

Inspires Students to Pursue Clean Energy Careers. In partnership with the Department of Energy, NSF will dedicate at least 5 percent of its undergraduate and graduate fellowship, scholarship, and traineeship programs, roughly \$19 million in 2011, to students pursuing clean energy careers.

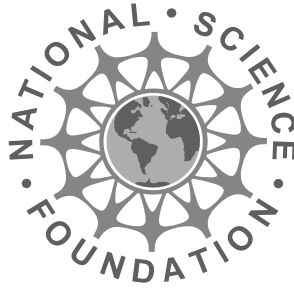
Increases Sustainability Research. The Budget provides \$766 million, an increase of \$105 million over comparable 2010 levels, for a new effort at NSF that represents a fundamen-

tal shift in how the agency defines and supports multidisciplinary energy and climate research. This new cross-agency effort is an integrated approach to increasing U.S. energy independence, enhancing environmental stewardship, reducing energy and carbon intensity, and generating sustained economic growth.

Broadens Reach and Increases Funding to Promote Study of Science and Technology. The Budget proposes to launch a comprehensive science and technology workforce program to engage undergraduates at Historically Black, Tribal, and Hispanic-serving colleges and universities by realigning and building on existing programs. Funding for these activities would increase by over 14 percent to \$103 million.

National Science Foundation
(In millions of dollars)

	Actual 2009	Estimate	
		2010	2011
Spending			
Discretionary Budget Authority:			
Research and Related Activities	5,183	5,564	6,019
Education and Human Resources	845	873	892
Major Research Equipment and Facilities Construction	152	117	165
Agency Operations and Award Management	294	300	329
Inspector General	4	5	5
National Science Board	12	14	14
Total, Discretionary budget authority	6,490	6,873	7,424
<i>Memorandum:</i>			
<i>Budget authority from American Recovery and Reinvestment Act</i>	3,002	—	—
Total, Discretionary outlays	5,834	6,149	6,653
<i>Memorandum: Outlays from American Recovery and Reinvestment Act</i>	27	1,463	859
Mandatory Outlays:			
H-B Fee Programs	96	165	137
All other	1	42	-2
Total, Mandatory outlays	97	207	135
Total, Outlays	5,931	6,356	6,788



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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 institu-

tions, 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 “cyber-infrastructure” 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

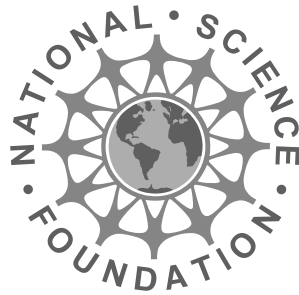
in a department for all, or most, of the relevant departments at an institution. This will build on past NSF work demonstrating improved instructional methods for individual teachers and courses. This program will support research on how to achieve widespread sustainable implementation of improved STEM 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	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



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Funding Highlights:

- Provides \$7.4 billion for the National Science Foundation, which is \$340 million above the 2012 enacted level. Investments are made in research priorities and savings of \$66 million are realized through terminations and reductions in lower-priority programs.
- Maintains the President's commitment to double funding for key basic research agencies, including a robust 5 percent increase over the 2012 enacted level for NSF.
- Fosters the development of a clean energy economy by providing \$203 million for a cross-agency sustainability research effort focused on renewable energy technologies and complex environmental- and climate-system processes.
- Supports future job creation in advanced manufacturing and emerging technologies with \$414 million for multidisciplinary research targeted at new materials, wireless communications, cyberinfrastructure, "smart" infrastructure, and robotics technologies.
- Protects the Nation's critical information technology infrastructure with \$57 million for a coordinated cybersecurity research initiative.
- Develops the next generation of scientific leaders with \$459 million for the prestigious graduate fellowship and early career faculty programs.
- Advances evidence-based reforms in K-16 science and math education, including improved undergraduate instruction at research universities and a joint math education initiative with the Department of Education.
- Makes tough reductions and terminations to lower-priority education, outreach, and research programs, which will save over \$66 million.
- Cuts administrative expenses, which will save an additional \$19 million.

The National Science Foundation (NSF) is the key Federal grant-making agency responsible for supporting the full breadth of non-biomedical science and engineering research at the Nation's universities and colleges. 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 plays a critical role in the implementation of the President's Plan for Science and Innovation. To support this important mission and underscore the priority the Administration places on innovation, the President's 2013 Budget provides \$7.4 billion for NSF, 5 percent above the 2012 enacted level, and focuses on cross-cutting research priorities in advanced manufacturing, clean energy, wireless communications, and science and mathematics education. Consistent with Administration-wide efforts to reduce spending in a tight fiscal environment, the Budget realizes savings by reducing administrative costs and eliminating funding for lower priority education and research programs that lack evidence of impact or do not align well with NSF's core mission responsibilities.

Invests in American Competitiveness

Supports the Fundamental Research that Underpins Progress in Science, Technology, and Innovation. The Administration proposes \$3.2 billion for the core fundamental research grant programs at NSF. The Budget also provides \$63 million for the second year of an interdisciplinary research and education initiative that is changing the way the agency solicits and funds innovative cross-disciplinary proposals that may not have fared well under the standard peer review process.

Lays the Groundwork for the Industries and Jobs of the Future. NSF focuses on linking the results of fundamental research to societal needs, including building human capacity through educating tomorrow's science, technology, engineering, and mathematics (STEM)

workforce. To encourage interdisciplinary research for a future bio-economy, the Budget provides \$30 million for innovative proposals at the interface of biology, mathematics, the physical sciences, and engineering. The Administration proposes \$106 million, an increase of \$28 million above the 2012 enacted level, for the second year of a cyberinfrastructure initiative that will accelerate the pace of discovery in all research disciplines. Given the large and growing importance of the wireless communication sector, the Budget also provides \$51 million for an interdisciplinary program to develop innovative approaches and technologies to enable more flexible and efficient access to the radio spectrum.

Supports the Long-Term Competitiveness of American Manufacturing. The Administration proposes \$149 million, an increase of \$39 million above the 2012 enacted level, for basic research targeted at developing revolutionary new manufacturing technologies in partnership with other Federal agencies and the private sector. This advanced manufacturing research is part of a larger \$257 million research initiative aimed at transforming static systems, processes, and infrastructure into adaptive, pervasive "smart" systems with embedded computational intelligence that can sense, adapt, and react. This larger research initiative also provides \$28 million for NSF's contribution to the National Robotics Initiative, which will accelerate the development and use of robots in the United States.

Supports the Long Term Development of a Clean Energy Economy. The Administration proposes \$355 million, an increase of \$14 million above the 2012 enacted level, for research that is directly relevant to future clean energy technologies such as solar power generation and energy efficiency. In coordination with other Federal agencies, this clean energy research is a key component of an integrated approach to increasing U.S. energy independence, enhancing environmental stewardship, reducing energy and carbon intensity, and generating sustainable economic growth.

Accelerates Innovations from the Laboratory to the Market. While the knowledge gained from NSF-supported basic research frequently advances a particular field of science or engineering, some results also show immediate potential for broader applicability and impact in the business world. The Administration proposes \$19 million for the new public-private “Innovation Corps” program at NSF aimed at bringing together the technological, entrepreneurial, and business know-how necessary to bring discoveries ripe for innovation out of the university lab.

Develops the Next Generation of Scientific Leaders. The Administration proposes \$459 million, an increase of \$55 over the 2012 enacted level, for two prestigious agency-wide science and engineering workforce development programs: the graduate research fellowship program and the faculty early career development program. These two programs recognize and support the best and brightest scientists and engineers at the formative stages of their careers. The Budget will also provide \$49 million for a new effort within NSF to integrate and leverage STEM education research to improve learning in science and engineering disciplines and to capitalize on the scientific assets across NSF to enhance outcomes in learning and education programs.

Promotes a Secure and Reliable Cyberspace. The Administration proposes \$110 million for a basic research initiative at NSF aimed at protecting the Nation’s critical information technology infrastructure, including the Internet, from a wide range of threats that challenge its security, reliability, availability, and overall trustworthiness. This initiative will be managed in partnership with other Federal agencies consistent with the Administration’s strategic plan for cybersecurity research and development.

Builds and Operates a Cutting-Edge Suite of Major Scientific Research Facilities. The Administration proposes \$196 million to continue the construction of four cutting-edge research projects: the world’s largest solar telescope, a fundamental gravitational physics

experiment, an ecological observation network that spans the United States, and an unprecedented set of ocean observatories. The operation of NSF’s existing research facilities—such as the academic research fleet, the Cornell synchrotron source, and the South Pole Station—is equally important, so the Administration proposes \$843 million to maintain this unique suite of facilities.

Increases the Number and Quality of STEM Graduates

Improves Undergraduate Math and Science Instruction. The Administration proposes \$20 million for the second year of a teacher-training research and development program for undergraduate teachers. This new 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 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. The Administration also proposes \$61 million, an increase of 56 percent over 2012 enacted, for NSF’s Transforming Undergraduate Education in STEM program. This increase will provide targeted research and development funds to design, test, and implement more effective educational materials, curriculum, and methods to improve undergraduate learning and completion rates in STEM for a diverse population.

Improves K-16 Math Education and Knowledge Building. The Administration proposes \$30 million at NSF (in combination with \$30 million at the Department of Education) for a jointly administered mathematics education initiative. This new program will create a multi-agency STEM tiered evidence initiative on K-16 mathematics that

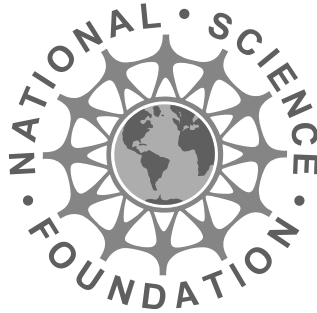
will combine the strength in mathematics education research at NSF with the Department of Education's State and school district connections and program scale up expertise. The program would provide grants to researchers, or programs with the greatest potential for transformational impact, and provide incentives for State, local, and institutional decision makers to infuse proven practices into math education programs. The program will lead to the creation of a knowledge-building infrastructure and model a new approach to grantmaking that systematically takes educational programs from early research through widespread effective use. This program is a pilot for a model that will be implemented more widely as part of the Federal STEM education strategic plan.

Makes Tough Choices

Reduces Administrative Expenses and Terminates Low-Priority Programs. The Administration proposes to terminate or reduce several research and public affairs programs that have achieved their original goals, are no longer innovative, or are tangential to the agency's core mission. NSF will also promote efficiency and effectiveness through improved business processes and the use of technology. The Administration proposes to repurpose the savings from these administrative efficiencies and low-priority program terminations to provide programmatic increases for high priority areas of basic research, innovation, workforce development, and science education.

National Science Foundation (In millions of dollars)

	Actual 2011	Estimate	
		2012	2013
Discretionary Budget Authority:			
Research and Related Activities	5,510	5,689	5,983
Education and Human Resources	861	829	876
Major Research Equipment and Facilities Construction	117	197	196
Agency Operations and Award Management	299	299	299
Office of the Inspector General	14	14	14
Office of the National Science Board	5	4	4
Total, Discretionary budget authority	6,806	7,032	7,372
 Total, Discretionary outlays	 7,050	 8,045	 7,368
Mandatory Outlays:			
H-1B Visa Fee Programs	115	152	150
Donations and Receipts	-19	84	10
Total, Mandatory outlays	96	236	160
 Total, Outlays	 7,146	 8,281	 7,528



NATIONAL SCIENCE FOUNDATION

Funding Highlights:

- Provides \$7.6 billion for the National Science Foundation, an increase of \$593 million above the 2012 enacted level, to expand the frontiers of knowledge, lay the foundation for economic growth and job creation, and educate a globally competitive workforce.
- Maintains the President's commitment to increase funding for key basic research agencies, including a robust 8.4 percent increase over the 2012 enacted level for the National Science Foundation.
- Builds an innovation economy through investments in a broad portfolio of foundational research, as well as investments in strategic areas, such as cyberinfrastructure, advanced manufacturing, and clean energy.
- Transforms science, technology, engineering, and mathematics education by empowering the National Science Foundation to lead undergraduate and graduate education reform, as part of a bold plan to strengthen education investments across the Federal Government.
- Increases agency efficiency by constraining administrative costs and making operations in Antarctica more cost-effective.
- Invests \$6 million to strengthen the agency's capacity to evaluate the outcomes of its programs.

The National Science Foundation (NSF) is the key Federal grant-making agency responsible for supporting the full breadth of non-biomedical science and engineering research at the Nation's universities and colleges. NSF's research and high-tech workforce development programs help lay the foundation for economic growth by building an innovation economy and educating globally competitive American workers. To support this important mission, the President's 2014 Budget

provides \$7.6 billion for NSF, 8.4 percent above the 2012 enacted level, including strong support for cross-cutting research priorities such as advanced manufacturing and clean energy. The Budget also supports efforts to improve agency operations, for example, by strengthening the agency's ability to evaluate the effectiveness of its programs and by increasing the efficiency of Antarctic operations.

Builds an Innovation Economy

Supports the Fundamental Research That Underpins Progress in Science, Technology, and Innovation. The Budget proposes \$6.2 billion for research and related activities at NSF and includes \$63 million to continue an interdisciplinary research and education initiative that is changing the way the agency solicits and funds innovative cross-disciplinary proposals.

Lays the Groundwork for the Industries and Jobs of the Future. NSF links the results of fundamental research to societal needs, including building human capacity through educating tomorrow's technical workforce. To encourage interdisciplinary research for a future bio-economy, the Budget provides \$51 million for innovative proposals at the interface of biology, mathematics, the physical sciences, and engineering. The Budget proposes \$155 million, double the 2012 enacted level, for a cyberinfrastructure initiative that will accelerate the pace of discovery in all research disciplines by advancing high performance computing—increasingly essential to developments in fields such as climate science and clean energy—by creating new research networks and data repositories, and by developing new systems to visualize data.

Invests in the Long-Term Competitiveness of American Manufacturing. The Budget proposes \$160 million, an increase of \$49 million above the 2012 enacted level, for fundamental research on revolutionary new manufacturing technologies in partnership with other Federal agencies and the private sector. This advanced manufacturing research is part of a larger \$300 million NSF research initiative aimed at transforming static systems, processes, and infrastructure into adaptive, pervasive “smart” systems with embedded computational intelligence that can sense, adapt, and react. This larger research effort also provides \$32 million for NSF's contribution to the National Robotics Initiative, which will accelerate the development and use of robots in the United States. It also provides \$42 million for NSF's contribution to the Materials Genome Initiative, which is designed to discover,

manufacture, and deploy advanced materials twice as fast as the current state of the art, at a fraction of the cost.

Supports the Long-Term Development of a Clean Energy Economy. The Budget proposes \$372 million for fundamental research that is directly relevant to future clean energy technologies such as solar power generation and energy efficiency. In coordination with other Federal agencies, this clean energy research is a key component of an integrated approach to increasing U.S. energy independence, enhancing environmental stewardship, reducing energy and carbon intensity, and generating sustainable economic growth.

Accelerates Innovations from the Laboratory to the Market. While the knowledge gained from NSF-supported fundamental research frequently advances a particular field of science or engineering, some results also show immediate potential for broader applicability and impact in the business world. The Budget proposes \$25 million, an increase of \$17 million above the 2012 enacted level, for the public-private “Innovation Corps” program at NSF aimed at bringing together the technological, entrepreneurial, and business know-how necessary to bring discoveries ripe for innovation out of the university lab.

Educates a Globally-Competitive American Workforce

Focuses Investments in Undergraduate Education to Increase Their Impact. In line with the Administration's bold reorganization of science, technology, engineering, and mathematics (STEM) education programs to improve effectiveness of Federal investments, the Budget proposes consolidating disparate STEM undergraduate education activities across the Government into a new consolidated program at NSF. This reform will increase the efficiency and effectiveness of these streamlined investments by implementing evidence-based instructional practices and supporting an expanded evidence base.

It includes research on how new technologies can facilitate adoption and use of new approaches to instruction. The Budget provides \$123 million for this new program.

Expands Research Opportunities for Early College Students. The Administration has committed to increasing the number of college graduates with degrees in technical fields. Solving real-world research problems can help inspire students to pursue such degrees. The Budget proposes \$79 million, an increase of \$13 million above the 2012 enacted level, for NSF's Research Experiences for Undergraduates. Since early opportunities to conduct research can be especially influential in maintaining a student's interest in science, engineering, and mathematics, the program will increase its investment in research experiences for those in their first or second year of college.

Consolidates an Array of Graduate Education Programs. As part of the plan to reform STEM education, the Budget proposes consolidating an array of graduate fellowship programs, streamlining the application and award process, and reducing administrative costs. This consolidation will pave the way for a broad strategy to prepare young scientists and engineers for the high-tech jobs of the future, and will enable programmatic innovation and experimentation

in ways previously not possible. The Budget proposes \$325 million for the consolidated graduate research fellowship program.

Improves Efficiency and Increases Use of Evidence

Increases Efficiency of Agency Operations. NSF will improve the efficiency of its operations through an array of administrative savings initiatives, such as strategic sourcing of administrative support contracts and lowered printing costs. The agency will also increase the operational efficiency of U.S. activities in the Antarctic by implementing the highest-payoff recommendations of a blue ribbon panel of outside experts.

Strengthens the Agency's Capacity to Evaluate Its Programs. NSF must have the capacity to gauge the outcomes of its investments in both research and education in order to ensure that its investments have the desired near and long-term impacts and to enable the agency to operate from a basis of evidence in its policy decisions. To enable this strategic management, NSF will expand and coordinate program evaluation and the collection and use of programmatic data through new agency-wide mechanisms.