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## Innovation for America's Economy, America's Energy, and American Skills

### *Science, Technology, Innovation, and STEM Education in the 2013 Budget*

*February 13, 2012*

“Think about the America within our reach: A country that leads the world in educating its people. An America that attracts a new generation of high-tech manufacturing and high-paying jobs. A future where we’re in control of our own energy, and our security and prosperity aren’t so tied to unstable parts of the world. An economy built to last, where hard work pays off, and responsibility is rewarded.”

- President Barack Obama  
January 2012

In order to be globally competitive in the 21<sup>st</sup> century and to create an American economy that is built to last, we must not only put this Nation on a sustainable fiscal path, but also create an environment where invention, innovation, and industry can flourish.

The President’s 2013 Budget supports the vision of a globally competitive American economy built to last. It includes continuing investment in science and engineering research that can turn ideas into realities. And it provides support for the creation of new technologies, products, businesses, and industries that, despite barely having been imagined a few years earlier, promise to become essential and even iconic.

The 2013 Budget recognizes today’s difficult economic circumstances and makes tough choices, limiting spending in many areas that in other times would be deemed worthy of greater support. But the Budget also focuses on and shows confidence in the future. By building and fueling America’s engines of discovery, it will expand the frontiers of human knowledge, promote sustainable economic growth based on a revitalized American manufacturing sector, cultivate a clean-energy future for America, improve health-care outcomes for more people at lower cost, address global climate-change challenges, manage competing demands on environmental resources, and reinforce our national security.

We can work together to create an economy built on American manufacturing, American energy, and skills for American workers. We can help spur innovation to accomplish these and other crucial goals by investing in research and development (R&D). The President’s 2013 Budget proposes \$140.8 billion for Federal R&D to do just that.

- **Pushing the Frontiers of Scientific Discovery.** To meet America’s challenges, including those related to the economy, health, energy, climate, environment, and national security, the 2013 Budget calls for a Federal basic and applied research portfolio totaling \$64.0 billion, up \$2.0 billion or 3.3 percent compared to the 2012 enacted level. (All comparisons are in current, not-adjusted-for-inflation dollars.)
- **Spurring Innovation.** To strengthen U.S. leadership in the 21<sup>st</sup> century’s high-tech knowledge-based economy within difficult budget constraints, the 2013 Budget proposes a substantial increase in non-defense R&D to \$64.9 billion, an increase of 5.0 percent over the 2012 enacted level. The Budget also invests \$75.9 billion for defense R&D.

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- **Maintaining Our Commitment to Three Key Science Agencies.** Three key science agencies—the National Science Foundation (NSF), the Department of Energy (DOE) Office of Science, and the National Institute of Standards and Technology (NIST) laboratories—are critical to preserving America’s place as the world leader in innovation. The 2013 Budget maintains the commitment to double the budgets for these agencies by providing a total of \$13.1 billion, an increase of 4.4 percent above 2012 funding levels.
  - **Promoting Clean, American Energy.** To develop the revolutionary technologies that will reduce U.S. dependence on oil and nourish the domestic energy industries and jobs of the future, the 2013 Budget proposes \$350 million for transformational energy R&D in DOE’s Advanced Research Projects Agency-Energy (ARPA-E). The Budget proposes \$2.3 billion for DOE’s Energy Efficiency and Renewable Energy office, with a focus on improving clean-vehicle technologies to move closer to one million advanced vehicles on the road, and on developing advanced materials and processes to cut the costs of manufacturing by using less energy. The clean energy proposals in the Budget will also help to reduce the emissions implicated in climate and global change: the Budget proposes \$2.6 billion for the U.S. Global Change Research Program (USGCRP) to understand, predict, mitigate, and adapt to global change.
  - **Creating New American Jobs in Manufacturing.** In support of a national effort to bring together industry, universities, and the Federal government to invest in emerging technologies that will create high-quality manufacturing jobs, the 2013 Budget provides \$2.2 billion for Federal advanced manufacturing R&D. These investments will expand R&D on innovative manufacturing processes, advanced industrial materials, and robotics. And they will complement ongoing efforts to encourage entrepreneurship and to improve the transitions from discovery to the marketplace.
  - **Supporting Medical Research to Improve the Health of All Americans.** To maintain American leadership in biomedical research, improve the health of Americans, and build the American bioeconomy of the future, the 2013 Budget proposes \$30.7 billion in discretionary appropriations for the National Institutes of Health (NIH).
  - **Educating Our Children in Science, Technology, Engineering, and Math.** To prepare American children for a future in which they can be the highly skilled American workers and innovators of tomorrow, the 2013 Budget proposes \$3.0 billion for the Federal investment in science, technology, engineering, and mathematics (STEM) education.
  - **Expanding Private Sector Investment.** To provide incentives for U.S. industries to keep investing in American innovation, the 2013 Budget proposes an expanded, simplified, and permanent Research and Experimentation (R&E) Tax Credit, which will provide companies the certainty they need that the credit will be available for the duration of their R&D investments.
  - **Building a 21<sup>st</sup> Century Infrastructure.** To build the infrastructure the U.S. needs to compete globally in the 21<sup>st</sup> Century, to spur innovation in the public and private sectors, and to provide the foundational capacities that facilitate the growth of new jobs and industries, the 2013 Budget proposes to free additional spectrum to help bring next-generation, wireless broadband Internet for all Americans; to invest in smart, energy-efficient, and reliable electricity delivery infrastructure; and to build a 21<sup>st</sup> century aviation system. The Budget proposes to invest \$300 million from expected spectrum auction proceeds for a Wireless Innovation (WIN) Fund to accelerate the research and development of cutting-edge wireless technologies and applications to support the deployment of a broadband network for first responders.

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- **Making Tough Choices.** The Obama Administration’s innovation investments fit within an overall discretionary budget that would be frozen at 2011 levels for the second year in a row under Budget Control Act of 2011 spending caps. For example, the \$74.1 billion proposed for development in the 2013 Budget represents a decline compared to 2012.

### **Priorities for Federal Research and Development in the 2013 Budget**

“Innovation also demands basic research. Today, the discoveries taking place in our federally financed labs and universities could lead to new treatments that kill cancer cells but leave healthy ones untouched. New lightweight vests for cops and soldiers that can stop any bullet. Don’t gut these investments in our budget. Don’t let other countries win the race for the future. Support the same kind of research and innovation that led to the computer chip and the Internet; to new American jobs and new American industries.”

- President Barack Obama  
January 2012

**The President’s 2013 Budget proposes \$140.8 billion for the Federal investment in research and development** (see Table 1). Within a fiscally responsible budget that reduces projected deficits and freezes overall discretionary spending within Budget Control Act of 2011 spending caps, Federal R&D increases \$2.0 billion or 1.4 percent over the 2012 enacted level. The 2013 Budget sets priorities and makes tough choices within tight fiscal constraints to make room for high-priority investments in innovation. In that spirit, the 2013 Budget proposes a decline in defense-related development but **proposes non-defense R&D of \$64.9 billion, an increase of 5.0 percent over the 2012 enacted level.** (All comparisons between 2012 appropriations and the 2013 Budget are in current, not-adjusted-for-inflation dollars.)

The 2013 Budget recognizes the role of government in fostering groundbreaking scientific and technological breakthroughs with a special emphasis on **basic and applied research** to fundamentally improve our understanding of nature, revolutionize key fields of science, and boost long-term economic growth and quality of life through new technologies. **The Federal research portfolio (comprising basic and applied research) totals \$64.0 billion in the 2013 Budget (see Figure 1 and Table 3), up \$2.0 billion or 3.3 percent compared to the 2012 enacted level.**

The 2013 Budget provides \$74.1 billion for development, a decline compared to the 2012 level, mostly due to reductions in the Department of Defense (DOD) weapons-systems development activities as its programs mature and transition to the production phase. R&D facilities and capital equipment funding totals \$2.7 billion.

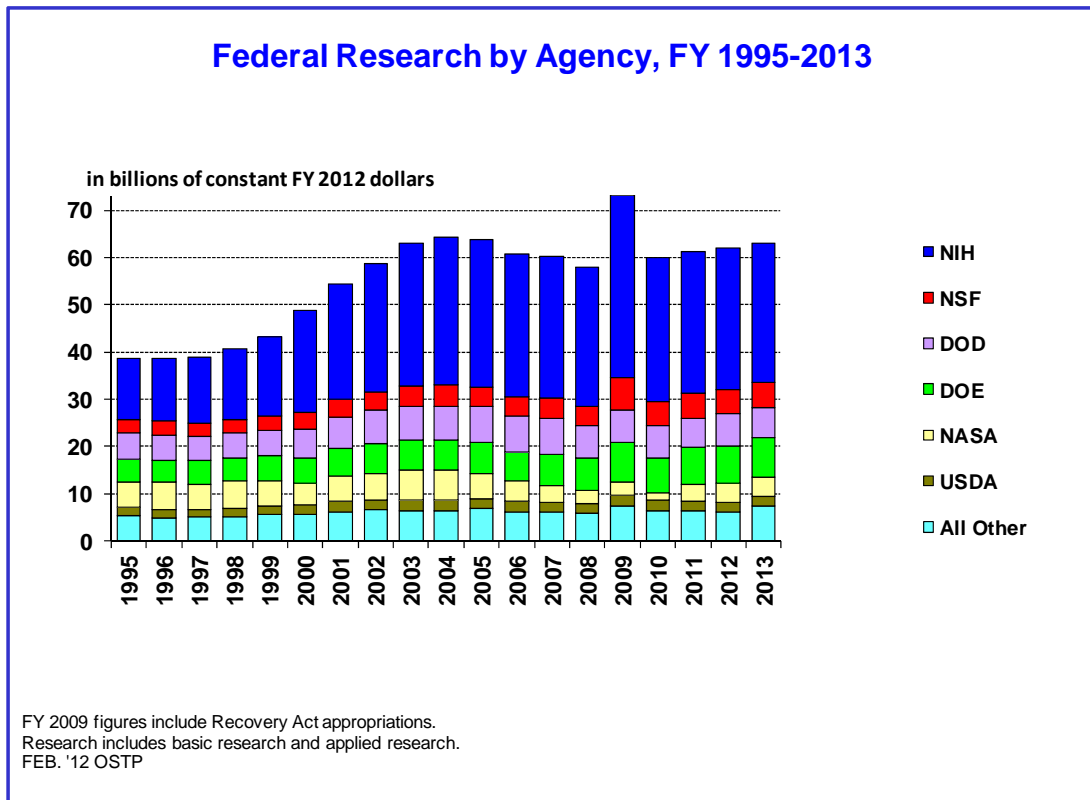


Figure 1.

### Highlights of Key R&D Funding Agencies in the 2013 Budget

The **National Institutes of Health (NIH)** supports high-quality, innovative biomedical research aimed at developing knowledge and therapies that will lead to longer and healthier lives for all Americans. NIH accomplishes this goal through a robust program of intramural and extramural research, education, and training conducted or sponsored by its Institutes and Centers. **The 2013 Budget provides \$30.7 billion in discretionary appropriations for NIH.** The 2013 Budget continues to support basic and applied biomedical research across a broad range of scientific and health opportunities both on campus and at academic and independent research institutions across the country. NIH will continue its focus on supporting new and early-stage investigators to maintain the pipeline of talented scientists in biomedical research. NIH will implement the recently created National Center for Advancing Translational Sciences (NCATS), including the Cures Acceleration Network (CAN), to bridge the translational divide between basic science and therapeutic applications by fostering novel collaborations among government entities, academia, and industry. In 2013, NIH will implement new grants management policies and direct resources away from lower-priority activities to sustain progress in biomedical research within a constrained fiscal environment.

The **National Science Foundation (NSF)** is the primary source of support for academic research for most non-biomedical disciplines, integrating fundamental research and education across the entire spectrum of the sciences and engineering. **The increase in NSF funding to \$7.4 billion in 2013, or 4.8 percent more than the 2012 enacted level,** will catalyze the development of fundamental ideas in science and engineering and support the people who generate them. The 2013 Budget expands NSF's efforts in clean-energy research, advanced manufacturing, wireless communications, and other emerging technologies. NSF proposes to increase research funding to promote discoveries that can spark innovations for tomorrow's clean-energy technologies with a cross-disciplinary approach to sustainability science. The

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Science, Engineering, and Education for Sustainability (SEES) portfolio will increase to \$203 million in the 2013 Budget for integrated activities involving renewable energy technologies and complex environmental and climate processes. NSF supports job creation in advanced manufacturing and emerging technologies with \$257 million for multidisciplinary research targeted at new materials, smart systems, advanced manufacturing technologies, and robotics technologies. To encourage interdisciplinary research for the bioeconomy of the future, the 2013 Budget provides \$30 million for research at the interface of biology, mathematics, the physical sciences, and engineering. The Budget proposes \$51 million for the NSF's Enhanced Access to the Radio Spectrum, or EARS, to support research into new and innovative ways to use the radio spectrum. NSF also proposes \$110 million for a cybersecurity basic research initiative. (Additional NSF highlights can be found in OSTP's STEM Education fact sheet.)

The 2013 Budget invests in the **Department of Defense's (DOD)** long-term scientific and technological innovation to ensure that the Nation has access to the best defense systems in the world. The Budget **proposes \$71.2 billion for DOD R&D, a \$1.5 billion decrease from the 2012 funding level, including \$11.9 billion for early-stage science and technology programs (S&T).** The Budget proposes \$2.8 billion for the Defense Advanced Research Projects Agency (DARPA) for its support of longer-term breakthrough research. The 2013 Budget sustains DOD's basic research ("6.1") with a record commitment of \$2.1 billion for research in high-priority areas such as cybersecurity, robotics, advanced learning, information access, cleaner and more efficient energy, and biodefense. DOD-funded research provides future affordable options for new defense systems and helps the Nation avoid technological surprise by potential adversaries. The 2013 Budget expands DOD's support of advanced manufacturing R&D by establishing public-private partnerships in targeted technologies.

The **National Aeronautics and Space Administration (NASA)** 2013 Budget **provides \$17.7 billion.** While making hard choices, the Budget builds on our existing space infrastructure and prioritizes innovative capabilities and technologies to sustain American leadership in space science and exploration. The Budget provides \$830 million in NASA funding that will be coupled with private-sector investments to develop new U.S. capabilities to transport human crews to the International Space Station. It also provides \$2.9 billion for the next-generation, deep-space crew capsule and heavy lift rocket that will send human-exploration missions to new destinations, and it invests \$699 million for the development of innovative new technologies that can expand the potential and lower the cost of our space science and exploration efforts. Earth Science funding of \$1.8 billion supports research and a robust fleet of Earth observation spacecraft to better understand climate change, improve future disaster predictions, and provide vital environmental data. The Budget provides \$628 million to place the James Webb Space Telescope on track to launch in 2018 while maintaining a world-leading astrophysics program. NASA's R&D portfolio totals \$9.6 billion in the 2013 Budget, an increase of \$203 million or 2.2 percent over the 2012 enacted level (see Table 1).

The **Department of Energy (DOE)** 2013 Budget positions the United States to lead in the clean-energy economy of the future with an **R&D portfolio that totals \$11.9 billion, an increase of \$884 million or 8.0 percent over the 2012 enacted level** (see Table 1). DOE's Office of Science (DOE SC) delivers discoveries and scientific tools that transform our understanding of energy and nature. The 2013 DOE SC Budget of \$5.0 billion increases funding for both research and cutting-edge facilities and maintains the President's commitment to double funding for three key science agencies. The 2013 Budget invests in DOE's clean-energy programs to reduce dependence on oil and to move toward a clean-energy future, including \$2.3 billion for Energy Efficiency and Renewable Energy (EERE). Within this total, the Budget provides \$290 million to expand activities on innovative manufacturing processes and advanced materials to enable U.S. companies to cut manufacturing costs by using less energy. The Budget also moves closer to the goal of 1 million advanced technology vehicles on the road by investing \$420 million within EERE to advance vehicle technologies and to make electric vehicles competitive, and by enhancing advanced vehicle tax incentives. The 2013 Budget provides \$350 million for the Advanced

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Research Projects Agency – Energy (ARPA-E) within DOE to support transformational discoveries and to accelerate solutions in the development of clean energy technology. The Budget also includes \$12 million for DOE, in collaboration with the Environmental Protection Agency (EPA) and the U.S. Geological Survey (USGS), to conduct a research initiative to understand and minimize the potential environmental, health, and safety impacts of natural gas and oil production from hydraulic fracturing. In DOE’s defense-related portfolio, the Budget includes \$4.7 billion for R&D in support of the nuclear stockpile, nuclear nonproliferation, and the Navy’s nuclear propulsion.

R&D in the **U.S. Department of Agriculture (USDA)** falls to **\$2.3 billion** in the 2013 Budget because of proposed reductions and terminations in lower-priority programs. The Budget provides increases for selected USDA research in human nutrition and obesity reduction, food safety, sustainable bioenergy, global food security, and climate change. The Budget increases funding to \$325 million for the National Institute of Food and Agriculture’s (NIFA) key competitive research program, the Agriculture Food and Research Initiative (AFRI). The Budget proposes \$292 million for USDA bioenergy research to develop next-generation cellulosic and algae-based biofuels that displace oil consumption and reduce greenhouse-gas emissions.

The Department of Commerce’s **National Institute of Standards and Technology (NIST)** promotes U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology. The 2013 Budget of **\$708 million for NIST’s intramural laboratories, a 13.8 percent increase over the 2012 enacted level**, will improve NIST’s research capabilities by supporting high-performance laboratory research and facilities in areas such as advanced manufacturing, cybersecurity, and nanotechnology. NIST’s 2013 Budget maintains the President’s commitment to double funding for three key science agencies. The Budget also includes \$128 million for the Hollings Manufacturing Extension Partnership and \$21 million for the Advanced Manufacturing Technology Consortia program, a new public-private partnership that will develop road maps of long-term industrial research needs and will fund research at leading universities and government laboratories directed at meeting those needs. The Budget also proposes \$300 million in mandatory NIST funding for a Wireless Innovation (WIN) Fund to develop standards, technologies, and applications to support the development of a broadband network for first responders. The **National Oceanic and Atmospheric Administration (NOAA)**, also part of the Department of Commerce, plays a vital role supporting research on the Earth’s oceans, atmosphere, and marine habitats. The NOAA budget of \$5 billion, including \$552 million for R&D, allows NOAA to strengthen the scientific basis for environmental decision-making, improve critical weather and climate services that protect life and property, invest more heavily in restoring our oceans and coasts, and ensure satellite continuity. The 2013 Budget provides \$1.8 billion to continue the development and acquisition of NOAA’s polar-orbiting and geostationary weather satellite systems, as well as satellite-borne measurements of sea level and potentially damaging solar storms. NOAA will conduct Arctic research (including climate change in the Arctic), improve regional projections of climate change, and support research on coastal and marine resources and development of marine sensor technologies to address harmful algal blooms and ocean acidification resulting from climate change.

**Department of Homeland Security (DHS)** R&D totals **\$729 million in the 2013 Budget, up 26.3 percent from the 2012 enacted level in order to partially restore steep cuts enacted in 2012 appropriations**. The 2013 Budget funds important R&D advances in cybersecurity, nuclear materials and explosives detection, and chemical/biological response systems. The Budget does not fund construction of the National Bio- and Agro-Defense Facility (NBAF) in 2013; rather, DHS will conduct a comprehensive reassessment of the need for and cost of a new laboratory.

The **Department of Education** R&D portfolio totals **\$398 million in the 2013 Budget**. The President has set the ambitious goal of preparing 100,000 STEM teachers over the next decade. The 2013 Budget allocates \$80 million from Education toward that goal, in partnership with NSF, to expand promising and

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effective models of teacher preparation in STEM. The Budget also provides an increase of \$7 million for Institute of Education Sciences R&D to support rigorous research and evaluation of strategies for improving learning outcomes. (Additional Education highlights can be found in OSTP's STEM Education fact sheet.)

The **Department of Veterans Affairs (VA)** 2013 Budget provides \$583 million for medical and prosthetic research and \$583 in medical care support for a total of \$1.2 billion for R&D across VA programs. In addition, VA's research program will receive approximately \$710 million from Federal and non-Federal grants. VA research focuses on biomedical topics of special relevance to wounded warriors and supports a robust program of clinical and translational research. VA's research program benefits from clinical care and research occurring together, allowing discoveries to be directly coordinated to the care of veterans.

The 2013 Budget for the **Department of the Interior** provides \$854 million for R&D. The total budget of the **United States Geological Survey (USGS)**, Interior's lead science agency, is **\$1.1 billion or a \$35 million increase from the 2012 enacted level**. The 2013 Budget proposes \$19 million for USGS to collaborate with EPA and DOE to conduct a research initiative to understand and minimize the potential environmental, health, and safety impacts of natural gas and oil production from hydraulic fracturing. The Budget also sustains USGS funding for water and ecosystems science programs; research to mitigate natural hazards such as earthquakes, landslides, and volcanoes; and climate change science.

**Environmental Protection Agency (EPA) R&D funding totals \$580 million in the 2013 Budget, \$12 million more than the 2012 funding level.** With this investment, EPA will focus on enhancing and strengthening the planning and delivery of science in its restructured research and science programs, making these efforts more integrated and cross-disciplinary. The 2013 Budget supports high-priority research of national importance in such areas as potential endocrine disrupting chemicals, green chemistry, green infrastructure, computational toxicology, drinking water, and STEM fellowships. The 2013 Budget proposes a total of \$14 million for EPA's ongoing research and new efforts to collaborate with USGS and DOE to reduce the potential health and environmental impacts of natural gas and oil production using hydraulic fracturing.

The 2013 Budget provides **\$1.1 billion for Department of Transportation (DOT) R&D**, an increase compared to the 2012 funding level. The Budget request includes funding for several R&D activities in the Federal Aviation Administration's (FAA) Next Generation Air Transportation System, known as NextGen. The Joint Planning and Development Office coordinates this important effort with NASA and other participating agencies. The Federal Highway Administration (FHWA) also manages a comprehensive, nationally coordinated highway research and technology program, engaging and cooperating with other highway research stakeholders. FHWA performs research activities associated with safety, infrastructure preservation and improvements, and environmental mitigation and streamlining.

The 2013 Budget **provides \$243 million for R&D programs in the Smithsonian Institution**. The Smithsonian continues to enhance its research efforts in science and the humanities in line with its strategic plan.

### **Multi-agency initiatives**

A number of R&D investments are being addressed through multi-agency activities coordinated through the National Science and Technology Council (NSTC) and other interagency forums. Table 2 shows details of three such efforts: global change research, networking and information technology R&D, and nanotechnology R&D.

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***U.S. Global Change Research Program:*** The 2013 Budget provides \$2.6 billion for the multi-agency U.S. Global Change Research Program (USGCRP), an increase of 5.6 percent over the 2012 enacted level (see Table 2). The U.S. Global Change Research Program (USGCRP) integrates and coordinates Federal research and application to assist the Nation and the world to understand, predict, mitigate, and adapt to human-induced and natural processes of global change, including but not limited to climate change. The 2013 Budget supports the goals set forth in the program's new decadal strategic plan, which include: Advance scientific knowledge of the integrated natural and human components of the Earth system; Provide the scientific basis to inform and enable timely decisions on adaptation and mitigation; Build sustained assessment capacity that improves the United States' ability to understand, anticipate, and respond to global change impacts and vulnerabilities; and Advance communications and education to broaden public understanding of global change. Reports and general information about the USGCRP and its various research activities are available on the program's website, [www.globalchange.gov](http://www.globalchange.gov).

***Networking and Information Technology R&D:*** The 2013 Budget proposes \$3.8 billion for the multi-agency Networking and Information Technology Research and Development (NITRD) Program, an increase of 1.8 percent over the 2012 enacted level. The multi-agency Networking and Information Technology Research and Development (NITRD) Program plans and coordinates agency research efforts in cyber security, high-end computing systems, advanced networking, software development, high-confidence systems, health IT, wireless spectrum sharing, cloud computing, and other information technologies. The 2013 Budget includes a focus on research to improve our ability to derive value and scientific inferences from enormous quantities of data, and continues to emphasize foundations for assured computing and secure hardware, software, and network design and engineering to address the goal of making Internet communications more secure and reliable. Budget information for NITRD is available at [www.nitrd.gov](http://www.nitrd.gov).

***National Nanotechnology Initiative:*** The 2013 Budget proposes \$1.8 billion for the multi-agency National Nanotechnology Initiative (NNI)—a \$70 million increase from the 2012 enacted level. To accelerate nanotechnology development in support of the President's priorities and innovation strategy, the National Nanotechnology Initiative (NNI) member agencies focus on R&D of materials, devices, and systems that exploit the unique physical, chemical, and biological properties that emerge in materials at the nanoscale (approximately 1 to 100 nanometers). Participating agencies continue to support fundamental research for nanotechnology-based innovation, technology transfer, and nanomanufacturing through individual investigator awards; multidisciplinary centers of excellence; education and training; and infrastructure and standards development, including openly-accessible user facilities and networks. Furthermore, agencies have identified and are pursuing Nanotechnology Signature Initiatives in the national priority areas of nanomanufacturing, solar energy, and nanoelectronics through close alignment of existing and planned research programs, public-private partnerships, and research roadmaps (for details see [www.nano.gov/initiatives/government/signature](http://www.nano.gov/initiatives/government/signature)).

The NNI agencies are guided by two strategic documents developed by the Nanoscale Science, Engineering, and Technology Subcommittee of the National Science and Technology Council. The 2011 NNI Strategic Plan aligns nanoscale science and technology research with the NNI's four goals and includes specific, measurable objectives for each goal. The 2011 NNI Environmental, Health, and Safety Research Strategy delineates a research and implementation framework that will produce the information necessary to protect public health and the environment, foster product development and commercialization, and consider the ethical, legal, and societal issues associated with technology development. Budget information is available at [www.nano.gov](http://www.nano.gov).



Table 1. R&amp;D in the 2013 Budget

**Table 1. R&D in the FY 2013 Budget by Agency**

(budget authority in millions of dollars)

	FY 2011	FY 2012	FY 2013	Change FY 12-13	
	Actual	Estimate	Budget	Amount	Percent
<b>Total R&amp;D</b>					
Defense (military)	77,500	72,739	<b>71,204</b>	-1,535	-2.1%
Health and Human Services	31,186	31,153	<b>31,400</b>	247	0.8%
<i>Nat'l Institutes of Health</i>	29,831	30,046	<b>30,051</b>	5	0.0%
<i>All Other HHS R&amp;D</i>	1,355	1,107	<b>1,349</b>	242	21.9%
NASA	9,099	9,399	<b>9,602</b>	203	2.2%
Energy	10,673	11,019	<b>11,903</b>	884	8.0%
<i>Atomic Energy Defense R&amp;D</i>	4,081	4,281	<b>4,691</b>	410	9.6%
<i>Office of Science</i>	4,461	4,463	<b>4,568</b>	105	2.4%
<i>Energy R&amp;D</i>	2,131	2,275	<b>2,644</b>	369	16.2%
National Science Foundation	5,486	5,680	<b>5,904</b>	224	3.9%
Agriculture	2,135	2,331	<b>2,297</b>	-34	-1.5%
Commerce 1/	1,275	1,258	<b>2,573</b>	1,315	104.5%
NOAA	686	574	<b>552</b>	-22	-3.8%
NIST 1/	533	555	<b>1,884</b>	1,329	239.5%
Interior	757	796	<b>854</b>	58	7.3%
<i>U.S. Geological Survey</i>	640	675	<b>718</b>	43	6.4%
Transportation	953	944	<b>1,076</b>	132	14.0%
Environmental Protection Agency	584	568	<b>580</b>	12	2.1%
Veterans Affairs	1,160	1,164	<b>1,166</b>	2	0.2%
Education	362	392	<b>398</b>	6	1.5%
Homeland Security	664	577	<b>729</b>	152	26.3%
Smithsonian	259	243	<b>243</b>	0	0.0%
All Other	621	606	<b>891</b>	285	47.0%
<b>Total R&amp;D</b>	142,714	138,869	<b>140,820</b>	1,951	1.4%
Defense R&D	81,581	77,020	<b>75,895</b>	-1,125	-1.5%
Nondefense R&D	61,133	61,849	<b>64,925</b>	3,076	5.0%
Basic Research	29,697	30,178	<b>30,627</b>	449	1.5%
Applied Research	30,833	31,783	<b>33,369</b>	1,586	5.0%
Total Research	60,530	61,961	<b>63,996</b>	2,035	3.3%
Development	80,246	74,483	<b>74,134</b>	-349	-0.5%
R&D Facilities and Equipment	1,938	2,425	<b>2,690</b>	265	10.9%

1/ NIST 2013 totals include mandatory proposals for the Wireless Innovation (WIN) Fund and the National Network for Manufacturing Innovation.

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Table 2. Interagency Science and Technology Initiatives

**Table 2. Interagency Science and Technology Initiatives**

(budget authority in millions)

	FY 2011	FY 2012	FY 2013	Change FY 12-13	
	Actual	Estimate	Budget	Amount	Percent
<b>National Nanotechnology Initiative (NNI)</b>					
National Science Foundation	485	426	<b>435</b>	9	2.1%
Defense	425	361	<b>289</b>	-72	-19.9%
Energy	346	315	<b>443</b>	127	40.3%
NASA	17	23	<b>22</b>	-1	-4.3%
Commerce (NIST)	96	95	<b>102</b>	7	7.0%
Health and Human Services	427	431	<b>429</b>	-2	-0.4%
Agriculture	20	17	<b>17</b>	0	0.0%
Environmental Protection Agency	17	17	<b>19</b>	2	11.8%
Homeland Security	9	7	<b>6</b>	-1	-14.3%
DOT - FHWA	1	1	<b>2</b>	1	100.0%
All Other	2	2	<b>2</b>	0	0.0%
<b>Total Nanotechnology</b>	<b>1,845</b>	<b>1,696</b>	<b>1,766</b>	<b>70</b>	<b>4.1%</b>
<b>Networking and Information Technology R&amp;D (NITRD)</b>					
Commerce	105	122	<b>142</b>	20	16.4%
Defense	1,186	1,183	<b>1,116</b>	-67	-5.7%
Energy	519	561	<b>594</b>	33	5.9%
Homeland Security	47	47	<b>64</b>	17	36.2%
Health and Human Services 1/	579	579	<b>577</b>	-2	-0.3%
NASA	94	103	<b>100</b>	-2	-2.2%
National Science Foundation	1,189	1,138	<b>1,207</b>	69	6.1%
All Other	6	6	<b>7</b>	1	16.7%
<b>Total NITRD</b>	<b>3,725</b>	<b>3,738</b>	<b>3,807</b>	<b>69</b>	<b>1.8%</b>
<b>U.S. Global Change Research Program (USGCRP)</b>					
National Science Foundation	321	333	<b>333</b>	0	0.0%
Energy	186	211	<b>230</b>	19	9.0%
Commerce (NOAA, NIST)	338	319	<b>342</b>	23	7.2%
Agriculture	75	83	<b>86</b>	3	3.6%
Interior (USGS)	64	59	<b>68</b>	9	15.3%
Environmental Protection Agency	20	19	<b>20</b>	1	5.3%
National Institutes of Health	4	4	<b>4</b>	0	0.0%
NASA	1,431	1,390	<b>1,469</b>	79	5.7%
Smithsonian	7	8	<b>8</b>	0	0.0%
DOT	1	1	<b>3</b>	2	200.0%
<b>Total USGCRP</b>	<b>2,448</b>	<b>2,427</b>	<b>2,563</b>	<b>136</b>	<b>5.6%</b>

1/ Includes funds from offsetting collections for Agency for Healthcare Research and Quality (AHRQ).

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Table 3. Research in the 2013 Budget

**Table 3. Research in the FY 2013 Budget**

(budget authority in millions of dollars)

	FY 2011	FY 2012	FY 2013	Change FY 12-13	
	Actual	Estimate	Budget	Amount	Percent
<b>RESEARCH (basic + applied)</b>					
Defense (military)	6,205	6,848	<b>6,593</b>	-255	-3.7%
<i>Basic Research ("6.1")</i>	1,877	2,111	<b>2,116</b>	5	0.2%
Health and Human Services	31,079	30,970	<b>31,202</b>	232	0.7%
<i>Nat'l Institutes of Health</i>	29,773	29,913	<b>29,919</b>	6	0.0%
NASA	3,540	4,141	<b>4,221</b>	80	1.9%
Energy	7,554	7,775	<b>8,248</b>	473	6.1%
<i>Office of Science</i>	3,899	3,839	<b>4,010</b>	171	4.5%
National Science Foundation	5,091	5,228	<b>5,446</b>	218	4.2%
Agriculture	2,107	2,072	<b>2,031</b>	-41	-2.0%
Commerce 1/	896	951	<b>1,671</b>	720	75.7%
NOAA	459	410	<b>384</b>	-26	-6.3%
NIST 1/	418	458	<b>1,206</b>	748	163.3%
Interior	675	677	<b>730</b>	53	7.8%
<i>U.S. Geological Survey</i>	565	565	<b>603</b>	38	6.7%
Transportation	701	673	<b>821</b>	148	22.0%
Environmental Protection Agency	497	483	<b>493</b>	10	2.1%
Veterans Affairs	1,066	1,074	<b>1,076</b>	2	0.2%
Education	227	234	<b>239</b>	5	2.1%
Homeland Security	251	187	<b>289</b>	102	54.5%
Smithsonian	201	202	<b>207</b>	5	2.5%
All Other	440	446	<b>729</b>	283	63.5%
<b>Total Research</b>	60,530	61,961	<b>63,996</b>	2,035	3.3%

1/ NIST 2013 totals include mandatory proposals for the Wireless Innovation (WIN) Fund and the National Network for Manufacturing Innovation.

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