

RESEARCH AND RELATED ACTIVITIES (R&RA)**\$6,253,540,000**
+\$689,620,000 / 12.4%

The FY 2012 Budget Request for the Research and Related Activities (R&RA) Appropriation is \$6,253.54 million, an increase of \$689.62 million, or 12.4 percent, above the FY 2010 Enacted level of \$5,563.92 million. Support from the R&RA Appropriation enables U.S. leadership and progress across the frontiers of scientific and engineering research and education.

Sustained, targeted investment by NSF in fundamental science and engineering advances discovery and learning and spurs innovation. In addition to the amounts shown above, NSF would also receive \$1.0 billion over five years for research on improving access to wireless broadband through the Wireless Innovation (WIN) Fund proposed under the Administration's *Wireless Innovation and Infrastructure Initiative* (WI3). Such transformational work holds great promise for meeting the myriad social, economic, and environmental challenges faced by both the Nation and the world.

In FY 2012, funding within the broad and flexible R&RA portfolio highlights the Administration's priorities for investing in the building blocks of American innovation. It also includes a push to better integrate interdisciplinary research and education and an investment in research in clean energy technology, nanotechnology, and advanced manufacturing.

R&RA Funding

(Dollars in Millions)

	FY 2010	FY 2010	FY 2010	FY 2012 Request	Change over	
	Omnibus Actual	ARRA Actual	Enacted/ Annualized FY 2011 CR ¹		FY 2010 Enacted Amount	Percent
Biological Sciences	\$714.77	\$0.35	\$714.54	\$794.49	\$79.95	11.2%
Computer & Information Science & Engineering	618.71	-	618.83	728.42	109.59	17.7%
Engineering	775.92	-	743.93	908.30	164.37	22.1%
Geosciences	891.87	0.40	889.64	979.16	89.52	10.1%
Mathematical & Physical Sciences	1,367.95	15.70	1,351.84	1,432.73	80.89	6.0%
Social, Behavioral & Economic Sciences	255.31	0.25	255.25	301.13	45.88	18.0%
Office of Cyberinfrastructure	214.72	-	214.28	236.02	21.74	10.1%
Office of International Science & Engineering	47.84	0.10	47.83	58.03	10.20	21.3%
Office of Polar Programs ²	451.77	2.23	451.16	477.41	26.25	5.8%
Integrative Activities	274.89	420.15	275.04	336.25	61.21	22.3%
U.S. Arctic Research Commission	1.58	-	1.58	1.60	0.02	1.3%
Total, R&RA	\$5,615.33	\$439.17	\$5,563.92	\$6,253.54	\$689.62	12.4%

Totals may not add due to rounding.

¹ A full-year 2011 appropriation for this account was not enacted at the time the budget was prepared; therefore, this account is operating under a continuing resolution (P.L. 111-242, as amended). The amounts included for 2011 reflect the annualized level provided by the continuing resolution.

² Funding for FY 2010 Enacted excludes a one-time appropriation transfer of \$54.0 million to U.S. Coast Guard per P.L. 111-117.

RESEARCH AND RELATED ACTIVITIES

Appropriation Language

For necessary expenses in carrying out the National Science Foundation Act of 1950, as amended (42 U.S.C. 1861-1875), and the Act to establish a National Medal of Science (42 U.S.C. 1880-1881); services as authorized by 5 U.S.C. 3109; maintenance and operation of aircraft and purchase of flight services for research support; acquisition of aircraft; and authorized travel; ~~\$6,018,830,000~~~~\$6,253,540,000~~, to remain available until September 30, ~~2012,2013~~, of which not to exceed ~~\$590,000,000~~~~\$550,000,000~~ shall remain available until expended for polar research and operations support, and for reimbursement to other Federal agencies for operational and science support and logistical and other related activities for the United States Antarctic program, ~~including up to \$54,000,000 for the procurement of polar icebreaking services from the Coast Guard: *Provided*, That the National Science Foundation shall only reimburse the Coast Guard for such sums as are agreed to according to the existing memorandum of agreement: *Provided further*, That receipts for scientific support services and materials furnished by the National Research Centers and other National Science Foundation supported research facilities may be credited to this appropriation.~~

**Research and Related Activities
FY 2011 Summary Statement
(Dollars in Millions)**

	Enacted/ Request	Carryover/ Recoveries	Transfers ¹	Expired	Total Resources	Obligations Total Incurred/ Est.
FY 2010 Appropriation	\$5,617.92	\$52.78	-\$54.00		\$5,616.70	\$5,615.33
FY 2009 ARRA	2,500.00	-	-	-	2,500.00	2,062.64
FY 2010 ARRA	-	439.17	-	-	439.17	439.17
FY 2010 Enacted/Ann. FY 2011 CR	5,563.92	1.37	-	-	5,565.29	5,565.29
FY 2012 Request	6,253.54	-	-	-	6,253.54	6,253.54
\$ Change from FY 2010 Enacted/Annualized FY 2011 CR						\$688.25
% Change from FY 2010 Enacted/Annualized FY 2011 CR						12.4%

¹ Totals may not add due to rounding.

¹ In FY 2010, \$54.0 million was transferred to the U.S. Coast Guard for ice breaking services per P.L. 111-117.

Explanation of Carryover

Within the **Research and Related Activities (R&RA)** regular appropriation, NSF carried over \$1.37 million into FY 2011. The major items include awards and contracts from various programs throughout NSF that were not ready for obligation in FY 2010. Obligation is expected in the second quarter of FY 2011.

For more information on the Explanation of FY 2010 Carryover of funds into FY 2011, please see the Technical Information tab of this document.

WIRELESS INNOVATION FUND

\$150,000,000

In FY 2012, the Wireless Innovation Fund would provide \$150.0 million, which represents the first year of a five-year investment totaling an estimated \$1.0 billion.

Wireless Innovation Fund

(Dollars in Millions)

	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Wireless Innovation Fund	\$150.00	\$220.00	\$260.00	\$220.00	\$150.00

The Administration’s *Wireless Innovation and Infrastructure Initiative* (WI3) proposes to reallocate a total of 500 megahertz of federal agency and commercial spectrum bands over the next 10 years in order to increase Americans’ access to wireless broadband.

In FY 2012, the Administration proposes to establish the Wireless Innovation (WIN) Fund to help develop the cutting edge wireless technologies required to drive future American economic growth and the competitiveness of American industry. The WIN Fund would be paid for with receipts generated through electromagnetic spectrum auctions. The total amount in the fund is expected to be \$3 billion and will support three categories of R&D investments: basic research, experimental testbeds, and application development.

NSF would receive \$1.0 billion of this total for work in the categories of basic research and experimental testbeds.

Basic Research: Of the total available to NSF, \$500.0 million will support basic research that complements and expands ongoing NSF efforts in Enhancing Access to the Radio Spectrum (EARS) and Cyber-Physical Systems (CPS). EARS will invest in basic research that transcends typical disciplinary research activities and enhances the efficiency with which the radio spectrum is used, and/or lead to improved access to wireless services for all Americans. CPS investments aim to discover the missing core of fundamental knowledge between the physical and software components of systems that: respond more quickly (e.g., autonomous collision avoidance); are more precise (e.g., robotic surgery and nano-tolerance manufacturing); work in dangerous or inaccessible environments (e.g., autonomous systems for search and rescue); provide large-scale distributed coordination (e.g., automated deployment of sensors in response to changing situations); are highly efficient (e.g., zero-net energy buildings); and augment human capabilities (assistive technologies and ubiquitous healthcare monitoring and delivery).

Wireless Testbeds: \$500.0 million will also be available for research on experimental wireless technology testbeds. This work will connect a sufficient number of campuses and cities so that experiments on these wireless testbeds can scale up to a national, even international level; allow for a critical mass of people on these campuses and in these cities to explore future open mobile networks at scale; allow for a rich set of multidisciplinary network science and engineering research experiments, including the social, behavioral, and economic sciences and engineering; and allow for entrepreneurs in cities and on campuses to develop novel mobile services not possible on the current Internet.

