

## IV. FEDERAL R&D DATA

### Federal R&D Funding

R&D is the collection of efforts directed towards gaining greater knowledge or understanding and applying knowledge toward the production of useful materials, devices, and methods. R&D investments can be characterized as basic research, applied research, development, R&D equipment, or R&D facilities, and OMB has used those or similar categories in its collection of R&D data since 1949.

**Basic research** is defined as systematic study directed toward greater knowledge or understanding of the fundamental aspects of phenomena and of observable facts without specific applications towards processes or products in mind.

**Applied research** is systematic study to gain knowledge or understanding necessary to determine the means by which a recognized and specific need may be met.

**Development** is systematic application of knowledge toward the production of useful materials, devices, and systems or methods, including design, development, and

improvement of prototypes and new processes to meet specific requirements.

**Research and development** equipment includes acquisition or design and production of movable equipment, such as spectrometers, microscopes, detectors, and other instruments.

Research and development facilities include the acquisition, design, and construction of, or major repairs or alterations to, all physical facilities for use in R&D activities. Facilities include land, buildings, and fixed capital equipment, regardless of whether the facilities are to be used by the Government or by a private organization, and regardless of where title to the property may rest. This category includes such fixed facilities as reactors, wind tunnels, and particle accelerators.

There are over twenty Federal agencies that fund R&D in the U.S. The nature of the R&D that these agencies fund depends on the mission of each agency and on the role of R&D in accomplishing it. Table 5-2 shows agency-by-agency spending on basic and applied research, development, and R&D equipment and facilities.

**Table 5-2. FEDERAL RESEARCH AND DEVELOPMENT SPENDING**

(Budget authority, dollar amounts in millions)

	2004 Actual	2005 Estimate	2006 Proposed	Dollar Change: 2005 to 2006	Percent Change: 2005 to 2006
<b>By Agency</b>					
Defense .....	65,462	70,422	70,839	417	1%
Health and Human Services .....	28,047	28,752	28,807	55	.....
NASA .....	10,574	10,990	11,527	537	5%
Energy .....	8,779	8,629	8,528	-101	-1%
National Science Foundation .....	4,160	4,082	4,194	112	3%
Agriculture .....	2,222	2,415	2,039	-376	-16%
Homeland Security .....	1,053	1,185	1,467	282	24%
Commerce .....	1,137	1,134	1,013	-121	-11%
Transportation .....	661	748	808	60	8%
Veterans Affairs .....	866	784	786	2	.....
Interior .....	627	615	582	-33	-5%
Environmental Protection Agency .....	661	572	569	-3	-1%
Other .....	1,089	1,243	1,145	-98	-8%
<b>Total .....</b>	<b>125,338</b>	<b>131,571</b>	<b>132,304</b>	<b>733</b>	<b>1%</b>
<b>Basic Research</b>					
Defense .....	1,358	1,513	1,319	-194	-13%
Health and Human Services .....	14,780	15,124	15,246	122	1%
NASA .....	2,473	2,368	2,199	-169	-7%
Energy .....	2,847	2,887	2,762	-125	-4%
National Science Foundation .....	3,524	3,432	3,480	48	1%
Agriculture .....	829	851	788	-63	-7%
Homeland Security .....	68	85	112	27	32%
Commerce .....	43	58	71	13	22%
Transportation .....	20	38	41	3	8%
Veterans Affairs .....	347	315	315	.....	.....
Interior .....	37	36	30	-6	-17%
Environmental Protection Agency .....	113	66	70	4	6%
Other .....	149	155	175	20	13%
<b>Subtotal .....</b>	<b>26,588</b>	<b>26,928</b>	<b>26,608</b>	<b>-320</b>	<b>-1%</b>

**Table 5-2. FEDERAL RESEARCH AND DEVELOPMENT SPENDING—Continued**

(Budget authority, dollar amounts in millions)

	2004 Actual	2005 Estimate	2006 Proposed	Dollar Change: 2005 to 2006	Percent Change: 2005 to 2006
<b>Applied Research</b>					
Defense .....	4,351	4,851	4,139	-712	-15%
Health and Human Services .....	13,007	13,274	13,410	136	1%
NASA .....	3,006	2,497	3,233	736	29%
Energy .....	2,693	2,760	2,709	-51	-2%
National Science Foundation .....	266	279	276	-3	-1%
Agriculture .....	1,055	1,093	942	-151	-14%
Homeland Security .....	247	346	399	53	15%
Commerce .....	828	825	763	-62	-8%
Transportation .....	349	423	494	71	17%
Veterans Affairs .....	476	430	433	3	1%
Interior .....	538	530	495	-35	-7%
Environmental Protection Agency .....	423	365	386	21	6%
Other .....	599	562	553	-9	-2%
<b>Subtotal .....</b>	<b>27,838</b>	<b>28,235</b>	<b>28,232</b>	<b>-3</b>	<b>.....</b>
<b>Development</b>					
Defense .....	59,701	63,903	65,331	1,428	2%
Health and Human Services .....	41	54	28	-26	-48%
NASA .....	3,189	3,727	3,511	-216	-6%
Energy .....	1,992	1,846	1,959	113	6%
National Science Foundation .....	.....	.....	.....	.....	.....
Agriculture .....	159	157	146	-11	-7%
Homeland Security .....	481	599	746	147	25%
Commerce .....	152	149	90	-59	-40%
Transportation .....	279	269	254	-15	-6%
Veterans Affairs .....	43	39	38	-1	-3%
Interior .....	49	46	54	8	17%
Environmental Protection Agency .....	125	141	113	-28	-20%
Other .....	324	495	396	-99	-20%
<b>Subtotal .....</b>	<b>66,535</b>	<b>71,425</b>	<b>72,666</b>	<b>1,241</b>	<b>2%</b>
<b>Facilities and Equipment</b>					
Defense .....	52	155	50	-105	-68%
Health and Human Services .....	219	300	123	-177	-59%
NASA .....	1,906	2,398	2,584	186	8%
Energy .....	1,247	1,136	1,098	-38	-3%
National Science Foundation .....	370	371	438	67	18%
Agriculture .....	179	314	163	-151	-48%
Homeland Security .....	257	155	210	55	35%
Commerce .....	114	102	89	-13	-13%
Transportation .....	13	18	19	1	.....
Veterans Affairs .....	.....	.....	.....	.....	N/A
Interior .....	3	3	3	.....	.....
Environmental Protection Agency .....	.....	.....	.....	.....	N/A
Other .....	17	31	21	-10	-32%
<b>Subtotal .....</b>	<b>4,377</b>	<b>4,983</b>	<b>4,798</b>	<b>-185</b>	<b>-4%</b>

**Table 5-3. FEDERAL SCIENCE AND TECHNOLOGY BUDGET**

(Budget authority, dollar amounts in millions)

	2004 Actual	2005 Estimate	2006 Proposed	Dollar Change: 2005 to 2006	Percent Change: 2005 to 2006
<b>By Agency</b>					
<b>National Institutes of Health</b> .....	<b>27,878</b>	<b>28,444</b>	<b>28,607</b>	<b>163</b>	<b>1%</b>
<b>NASA</b> .....	<b>9,231</b>	<b>9,116</b>	<b>9,493</b>	<b>377</b>	<b>4%</b>
Science .....	5,600	5,527	5,476	-51	-1%
Aeronautics .....	1,057	906	852	-54	-6%
Exploration Systems .....	2,574	2,683	3,165	482	18%
<b>National Science Foundation</b> .....	<b>5,578</b>	<b>5,473</b>	<b>5,605</b>	<b>132</b>	<b>2%</b>
<b>Defense</b> .....	<b>5,709</b>	<b>6,363</b>	<b>5,458</b>	<b>-905</b>	<b>-14%</b>
Basic Research .....	1,358	1,513	1,319	-194	-13%
Applied Research .....	4,351	4,850	4,139	-711	-15%
<b>Energy</b> <sup>1</sup> .....	<b>5,494</b>	<b>5,635</b>	<b>5,357</b>	<b>-278</b>	<b>-5%</b>
Science Programs .....	3,484	3,600	3,463	-137	-4%
Energy Supply: Renewables .....	357	380	354	-26	-7%
Energy Supply: Electricity Transmission & Distribution .....	81	101	84	-17	-17%
Energy Supply: Nuclear Energy .....	292	386	390	4	1%
Energy Conservation <sup>2</sup> .....	607	596	576	-20	-3%
Fossil Energy .....	673	572	491	-81	-14%
<b>Agriculture</b> .....	<b>2,047</b>	<b>2,127</b>	<b>1,922</b>	<b>-205</b>	<b>-10%</b>
CSREES Research and Education <sup>3</sup> .....	629	670	560	-110	-16%
Economic Research Service .....	71	74	81	7	9%
Agricultural Research Service <sup>4</sup> .....	1,081	1,102	996	-106	-10%
Forest Service: Forest and Rangeland Research .....	266	276	285	9	3%
<b>Interior (USGS)</b> .....	<b>938</b>	<b>935</b>	<b>934</b>	<b>-1</b>	<b>.....</b>
<b>Commerce</b> .....	<b>965</b>	<b>992</b>	<b>858</b>	<b>-134</b>	<b>-14%</b>
NOAA: Oceanic & Atmospheric Research .....	393	404	361	-43	-11%
NIST: Intramural Research and Facilities .....	401	451	485	34	8%
NIST: Advanced Technology Program .....	171	137	.....	-137	-100%
<b>Environmental Protection Agency</b> <sup>5</sup> .....	<b>826</b>	<b>780</b>	<b>792</b>	<b>12</b>	<b>2%</b>
<b>Veterans Affairs</b> <sup>6</sup> .....	<b>866</b>	<b>784</b>	<b>786</b>	<b>2</b>	<b>.....</b>
<b>Transportation</b> .....	<b>683</b>	<b>694</b>	<b>673</b>	<b>-21</b>	<b>-3%</b>
Highway research <sup>7</sup> .....	564	566	543	-23	-4%
Federal Aviation Administration: Research, Engineering, and Development .....	119	131	130	-1	-1%
<b>Education</b> .....	<b>350</b>	<b>355</b>	<b>345</b>	<b>-10</b>	<b>-3%</b>
Special Education Research and Innovation .....	78	83	73	-10	-12%
National Institute on Disability and Rehabilitation Research .....	107	108	108	.....	.....
Research, Development, and Dissemination <sup>8</sup> .....	165	164	164	.....	.....
<b>Total</b> .....	<b>60,565</b>	<b>61,696</b>	<b>60,819</b>	<b>-877</b>	<b>-1%</b>

<sup>1</sup> Data do not reflect actual transfers to Science Programs from other Department of Energy R&D programs to support the Small Business Innovation Research and the Small Business Technology Transfer programs.

<sup>2</sup> Excludes weatherization and state grant programs.

<sup>3</sup> Includes receipts and interest for Native American Endowment: \$11 million in 2004; \$14 million in 2005; \$15 million in 2006.

<sup>4</sup> Excludes buildings and facilities.

<sup>5</sup> Includes the medical care and prosthetic research appropriation and VA medical care support transfer to research.

<sup>6</sup> Science and Technology, plus Superfund transfer.

<sup>7</sup> Includes research and development funding for the Federal Highway Administration, the Federal Motor Carrier Safety Administration, and the National Highway Traffic Safety Administration.

<sup>8</sup> Does not include funding for Regional Educational Labs.