

## Office of Science

(dollars in thousands)

	FY 2009 Current Approp.	FY 2009 Current Recovery	FY 2010 Current Approp.	FY 2011 Congressional Request	FY 2011 vs. FY 2010	
					\$	%
Advanced Scientific Computing Research	358,772	161,795	394,000	426,000	+32,000	+8.1%
Basic Energy Sciences	1,535,765	555,406	1,636,500	1,835,000	+198,500	+12.1%
Biological and Environmental Research	585,176	165,653	604,182	626,900	+22,718	+3.8%
Fusion Energy Sciences Program	394,518	91,023	426,000	380,000	-46,000	-10.8%
High Energy Physics	775,868	232,390	810,483	829,000	+18,517	+2.3%
Nuclear Physics	500,307	154,800	535,000	562,000	+27,000	+5.0%
Workforce Development for Teachers and Scientists	13,583	12,500	20,678	35,600	+14,922	+72.2%
Science Laboratories Infrastructure	145,380	198,114	127,600	126,000	-1,600	-1.3%
Safeguards and Security	80,603	0	83,000	86,500	+3,500	+4.2%
Science Program Direction	186,695	5,600	189,377	214,437	+25,060	+13.2%
Congressionally Directed Projects	91,064	0	76,890	0	-76,890	-100.0%
Small Business Innovation Research (SBIR)	154,439	55,637	0	0	—	—
<b>Subtotal, Science</b>	<b>4,822,170</b>	<b>1,632,918</b>	<b>4,903,710</b>	<b>5,121,437</b>	<b>+217,727</b>	<b>+4.4%</b>
Use of Prior Year Balances and Other Adjustments	-15,000	0	0	0	—	—
<b>Total, Science</b>	<b>4,807,170</b>	<b>1,632,918</b>	<b>4,903,710</b>	<b>5,121,437</b>	<b>+217,727</b>	<b>+4.4%</b>

The FY 2011 **Office of Science** budget request is \$5,121.4 million, an increase of \$217.7 million, or 4.4% above the FY 2010 appropriation. The Science program is the Nation's primary sponsor of basic research in support of a broad array of subjects leading to improved energy security and related issues including climate change, biomass, hydrogen, solar, genomics, high performance computing, and nanotechnology. Science maintains and operates several major national laboratories and supports 27,000 researchers and associated technical workers at laboratories and universities nationwide. Funding for each scientific discipline is as follows:

### Advanced Scientific Computing Research (ASCR) (\$426.0 million)

- The ASCR program supports research to discover, develop, and deploy computational and networking capabilities to analyze, model, simulate, and predict complex phenomena important to DOE. The FY 2011 request supports the Oak Ridge and Argonne Leadership Computing Facilities, the National Energy Research Scientific Computing Center, and the Energy Sciences Network. Support is also provided for research in applied mathematics, computer science, advanced networking, and computational partnerships.

### Basic Energy Sciences (BES) (\$1,835.0 million)

- BES supports fundamental research to understand, predict, and ultimately control matter and energy at the electronic, atomic, and molecular levels to provide the foundations for new energy technologies and for mitigation of the environmental impacts of energy use. The FY 2011 request includes support for several high priority research areas such as discovery and development of new materials, combustion modeling, ultrafast science, and fundamental sciences related to carbon capture and advanced nuclear energy systems. BES also supports several major user facilities including synchrotron radiation light sources, neutron scattering facilities, and Nanoscale Science Research Centers. Construction continues on the National Synchrotron Light Source-II. Two Energy Innovation Hubs are supported in FY 2011 focusing on Fuels from Sunlight and Batteries and Energy Storage. Support increases for the Energy Frontier Research Centers and for the first full year of operations of the Linac Coherent Light Source.

### Biological and Environmental Research (BER) (\$626.9 million)

- The BER program supports research to explore the frontiers of genome-enabled biology; discover the physical, chemical, and biological drivers of climate change; and seek the molecular determinants of environmental sustainability and stewardship. The FY 2011 request continues support for the three Bioenergy Research Centers, the Joint Genome Institute, and the Environmental Molecular Sciences Laboratory. Support increases for uncertainty quantification in climate models, incorporation of observational data sets, model development testbeds, and the development on numerical methods to enable climate models to use future computing architectures.

**Fusion Energy Sciences (FES) (\$380.0 million)**

- FES supports research to expand the fundamental understanding of matter at very high temperatures and densities and the scientific foundations needed to develop a fusion energy source. In FY 2011 funding for the international ITER project decreases consistent with the current project status. Support continues for research and operation of domestic research facilities including the DIII-D tokamak, Alcator C-Mod tokamak, and the National Spherical Torus Experiment. Support also continues for the joint program in high energy density laboratory plasmas with the National Nuclear Security Administration.

**High Energy Physics (HEP) (\$829.0 million)**

- The HEP program supports research to understand how the universe works at its most fundamental level. This is accomplished by discovering the most elementary constituents of matter and energy, probing the interactions among them, and exploring the basic nature of space and time itself. The FY 2011 request supports research in these areas as well as operations of the user facilities. The Tevatron Collider at Fermi National Accelerator Laboratory is supported. Fabrication continues on the NuMI Off-Axis Neutrino Appearance project. Support for Large Hadron Collider detector operations, maintenance, computing, and R&D continues in FY 2011. Funding is provided to initiate project engineering and design for the Long Baseline Neutrino Experiment and the Muon to Electron Conversion Experiment.

**Nuclear Physics (NP) (\$562.0 million)**

- NP supports research to discover, explore, and understand all forms of nuclear matter. NP supports two large user facilities, the Continuous Electron Beam Accelerator Facility (CEBAF) at Thomas Jefferson National Accelerator Laboratory and the Relativistic Heavy Ion Collider at Brookhaven National Laboratory, as well as two smaller user facilities. Support is provided for the ongoing construction of the CEBAF 12 GeV Upgrade and for engineering and design activities for the Facility for Rare Isotope Beams. NP also supports the Isotope Development and Production for Research and Applications program.

**Workforce Development for Teachers and Scientists (WDTS) (\$35.6M)**

- The WDTS program contributes to the national effort to ensure that DOE and the Nation have a sustained pipeline of highly trained science, technology, engineering, and mathematics workers. In FY 2011, support for the SC graduate fellowship program is expanded and starts a new research program to assess the effectiveness of science investments in support of the Administration's Science of Science Policy initiative.