General and special funds—Continued

OTHER DEFENSE ACTIVITIES—Continued

Office of Legacy Management (Defense).—The programs within this office support long-term stewardship activities at sites where active remediation as a result of weapons production has been completed. These activities include groundwater monitoring, administration of post closure contractor liabilities, records management, and disposition of assets excess to current Department needs.

Office of Future Liabilities (Defense).—This new program funds and manages defense-related environmental liabilities that are outside the cleanup and closure mission of the Environmental Management program. These liabilities include decontamination and decommissioning of excess facilities, cleanup of contaminated media, and disposition of excess nuclear materials, which will continue to be generated by sites with active missions. The Office of Future Liabilities will work cooperatively with the Offices of Environmental Management and Legacy Management to accomplish its mission.

Office of Civilian Radioactive Waste Management.—The program will be responsible for the management and implementation of the Department's National Spent Fuel Program, which coordinates and resolves issues regarding the characterization, safe storage, transportation, and proper final disposition of all Departmental spent nuclear fuel. In addition, the program will be responsible for management of the Foreign Research Reactor Spent Fuel Acceptance Program, including the planning and coordination of the receipt and transportation of spent nuclear fuel from the foreign reactors to the designated Departmental site as well as maintenance and operations of the Idaho Chemical Process Plant-666 and for the storage of all spent fuel located within this facility.

Object Classification (in millions of dollars)

Identification code 89–0243–0–1–999		2003 actual	2004 est.	2005 est.
	Personnel compensation:			
11.1	Full-time permanent	68	68	66
11.3	Other than full-time permanent	3	3	2
11.5	Other personnel compensation	3	3	2
11.9	Total personnel compensation	74	74	70
12.1	Civilian personnel benefits	16	16	15
13.0	Benefits for former personnel	1	1	1
21.0	Travel and transportation of persons	3	3	3
23.3	Communications, utilities, and miscellaneous charges	1	1	1
25.1	Advisory and assistance services	49	49	51
25.2	Other services	199	227	274
25.3	Other purchases of goods and services from Government accounts	30	30	30
25.4	Operation and maintenance of facilities	122	237	191
25.5	Research and development contracts	14	14	14
25.7	Operation and maintenance of equipment	4	4	4
26.0	Supplies and materials	5	5	5
31.0	Equipment	2	4	4
41.0	Grants, subsidies, and contributions	6	17	17
99.9	Total new obligations	526	682	680

Personnel Summary

Identification code 89–0243–0–1–999		2003 actual	2004 est.	2005 est.
1001	Total compensable workyears: Civilian full-time equivalent employment	658	993	965

DEFENSE NUCLEAR WASTE DISPOSAL

For nuclear waste disposal activities to carry out the purposes of Public Law 97–425, as amended, including the acquisition of real property or facility construction or expansion, [$390,000,000] *$131,000,000*, to remain available until expended. *(Energy and Water Development Appropriations Act, 2004.)*

Program and Financing (in millions of dollars)

Identification code 89–0244–0–1–053		2003 actual	2004 est.	2005 est.
	Obligations by program activity:			
00.01	Direct Program Activity	313	388	131
10.00	Total new obligations	313	388	131
	Budgetary resources available for obligation:			
22.00	New budget authority (gross)	313	388	131
23.95	Total new obligations	−313	−388	−131
	New budget authority (gross), detail:			
	Discretionary:			
40.00	Appropriation	315	390	131
40.35	Appropriation permanently reduced	−2	−2	
43.00	Appropriation (total discretionary)	313	388	131
	Change in obligated balances:			
72.40	Obligated balance, start of year	26	31	99
73.10	Total new obligations	313	388	131
73.20	Total outlays (gross)	−308	−322	−195
74.40	Obligated balance, end of year	31	99	35
	Outlays (gross), detail:			
86.90	Outlays from new discretionary authority	282	291	98
86.93	Outlays from discretionary balances	26	31	97
87.00	Total outlays (gross)	308	322	195
	Net budget authority and outlays:			
89.00	Budget authority	313	388	131
90.00	Outlays	308	322	195

This appropriation was established by Congress as part of the 1993 Energy and Water Development Appropriation (P.L. 102–377) in lieu of payment from the Department of Energy into the Nuclear Waste Fund for activities related to the disposal of defense high-level waste.

The program's cost estimates reflect DOE's best projections, given the scope of work identified and planned schedule of required activities. Future budget requests for the Program have yet to be established and will be determined through the annual executive and congressional budget process.

Since passage of the Nuclear Waste Policy Act of 1982, as amended, the Nuclear Waste Fund has incurred costs for activities related to disposal of high-level waste generated from the atomic energy defense activities of the Department of Energy. At the end of 2003 the balance owed by the Federal Government to the Nuclear Waste Fund was approximately $1,056 million (including principal and interest). The "Defense Nuclear Waste Disposal" appropriation was established to ensure payment of the Federal Government's contribution to the nuclear waste repository program. Through 2003, a total of approximately $2,056 million has been appropriated to support nuclear waste repository activities attributed to atomic energy defense activities.

Object Classification (in millions of dollars)

Identification code 89–0244–0–1–053		2003 actual	2004 est.	2005 est.
25.1	Advisory and assistance services	2	3	1
25.2	Other services(service contracts)	1	1	1
25.3	Other purchases of goods and services from Government accounts	34	42	14
25.4	Operation and maintenance of facilities	255	316	106
41.0	Grants, subsidies, and contributions	21	26	9
99.9	Total new obligations	313	388	131

ENERGY PROGRAMS

Federal Funds

General and special funds:

SCIENCE

For Department of Energy expenses including the purchase, construction and acquisition of plant and capital equipment, and other

expenses necessary for science activities in carrying out the purposes of the Department of Energy Organization Act (42 U.S.C. 7101 et seq.), including the acquisition or condemnation of any real property or facility or for plant or facility acquisition, construction, or expansion, and purchase of not to exceed [15] *four* passenger motor vehicles for replacement only, including not to exceed one ambulance, [$3,451,700,000] *$3,431,718,000*, to remain available until expended. *(Energy and Water Development Appropriations Act, 2004.)*

[SEC. 130. DEPARTMENT OF ENERGY, ENERGY PROGRAMS, SCIENCE. For an additional amount for "Science", $50,000,000, to remain available until expended, is provided for the Coralville, Iowa, project, which is to utilize alternative renewable energy sources.]

[SEC. 131. For an additional amount for the "Science" account of the Department of Energy in the energy and Water Development Appropriations Act, 2004, there is appropriated $250,000, to remain available until expended, for Biological Sciences at DePaul University; $500,000, to remain available until expended, for the Cedars-Sinai Gene Therapy Research Program; and $500,000, to remain available until expended, for the Hartford Hospital Interventional Electrophysiology Project.] *(Division H, H.R. 2673 Consolidated Appropriations Bill, FY 2004.)*

Program and Financing (in millions of dollars)

Identification code 89–0222–0–1–251		2003 actual	2004 est.	2005 est.
	Obligations by program activity:			
00.01	High energy physics	700	735	737
00.03	Nuclear physics	369	391	401
00.05	Biological and environmental research	492	644	502
00.06	Basic energy sciences	998	1,014	1,064
00.07	Advanced scientific computing research	166	202	204
00.09	Science laboratory infrastructure	41	55	29
00.11	Program direction	134	151	155
00.14	Fusion energy sciences	239	264	264
00.15	Safeguard and securities	48	48	68
00.17	Workforce development for teachers & scientists	5	6	8
00.18	Small business innovation research	94	.....	.....
00.19	Small business technology transfer	6	.....	.....
10.00	Total new obligations	3,292	3,510	3,432
	Budgetary resources available for obligation:			
21.40	Unobligated balance carried forward, start of year	9	27	.....
22.00	New budget authority (gross)	3,307	3,484	3,432
22.10	Resources available from recoveries of prior year obligations	2	.....	.....
23.90	Total budgetary resources available for obligation	3,318	3,511	3,432
23.95	Total new obligations	−3,292	−3,510	−3,432
24.40	Unobligated balance carried forward, end of year	27	.....	.....
	New budget authority (gross), detail:			
	Discretionary:			
40.00	Appropriation	3,294	3,505	3,432
40.35	Appropriation permanently reduced	−21	−21	.....
42.00	Transferred from other accounts	34	.....	.....
43.00	Appropriation (total discretionary)	3,307	3,484	3,432
	Change in obligated balances:			
72.40	Obligated balance, start of year	1,824	1,859	1,963
73.10	Total new obligations	3,292	3,510	3,432
73.20	Total outlays (gross)	−3,293	−3,405	−3,438
73.32	Obligated balance transferred from other accounts	38	.....	.....
73.45	Recoveries of prior year obligations	−2	.....	.....
74.40	Obligated balance, end of year	1,859	1,963	1,957
	Outlays (gross), detail:			
86.90	Outlays from new discretionary authority	1,918	2,020	1,990
86.93	Outlays from discretionary balances	1,375	1,385	1,448
87.00	Total outlays (gross)	3,293	3,405	3,438
	Net budget authority and outlays:			
89.00	Budget authority	3,307	3,484	3,432
90.00	Outlays	3,293	3,405	3,438

High energy physics.—This research program focuses on gaining insights into the fundamental constituents of matter, the fundamental forces in nature, and the transformations between matter and energy at the most elementary level. The program encompasses both experimental and theoretical particle physics research and related advanced accelerator and detector technology R&D. The primary mode of experimental research involves the study of collisions of energetic particles using large particle accelerators or colliding beam facilities.

In addition to contributing to breakthrough discoveries such as the existence of the top quark, state-of-the-art technology developed for accelerators and detectors contributes to progress in fields such as fast electronics, high-speed computing, superconducting magnet technology, and high-power radio frequency devices. High energy physics research also continues to make major contributions to accelerator technology and provides the expertise necessary for the expansion of such technology into fields such as medical diagnostics and research using synchrotron light sources.

The high energy physics budget request will support the continued operation of two of the Department's major high energy physics facilities: the Fermilab Tevatron and the Stanford B-Factory. In addition, $32.5 million is provided for the Department's contribution to continued U.S. participation in the Large Hadron Collider project at the European Center for Nuclear Research.

The high energy physics R&D request provides funding for advanced accelerator and detector R&D that is necessary for next-generation high energy particle accelerators. The request includes $0.8 million for completion of the neutrinos at the main injector construction project. In addition, a major item of equipment is initiated for the B-particle physics at the Tevatron experiment, or BTeV.

Nuclear Physics.—The goal of the nuclear physics program is to understand the interactions and structure of atomic nuclei and to investigate fundamental particles and forces of nature as manifested in nuclear matter. The program will continue to focus on the role of quarks in the composition and interactions of nuclei, the application of nuclear physics methods to astrophysical problems, the properties of neutrinos, and the mechanisms by which colliding nuclei exchange mass, energy, and angular momentum.

The nuclear physics program supports and provides experimental equipment to qualified scientists and research groups conducting experiments at nuclear physics accelerator facilities. These facilities provide new insights and advance our knowledge of the nature of matter and energy and develop the scientific knowledge, technologies and trained manpower needed to underpin the DOE's missions for nuclear related national security, energy, and environmental quality.

The Thomas Jefferson National Accelerator Facility/Continuous Electron Beam Accelerator Facility experimental program began in 1996 and will continue. At the MIT/Bates accelerator, a program of research utilizing the BLAST large acceptance detector will be phased out. Experimental operations at the Radioactive Ion Beam facility in Oak Ridge National Laboratory will continue. Operation of ATLAS (ANL) will be supported, as will the operation of the university-based accelerator laboratories. The 88-inch cyclotron (LBNL) will be terminated as a Science User Facility in 2004.

The Relativistic Heavy Ion Collider (RHIC) research program will continue as RHIC and its four major detectors approach their full design potential, allowing researchers to explore a new regime of nuclear matter and nuclear interactions that up to now have only been characterized theoretically. Research and development for a possible future facility, the rare isotope accelerator, continues.

Biological and environmental research.—This program develops the knowledge base necessary to identify, understand, and anticipate the long-term health and environmental consequences of energy use and development and utilizes the Department's unique scientific and technological capabilities to solve major scientific problems in the environment, medicine, and biology. Planned activities include programs in global climate change; terrestrial, atmospheric and marine environmental processes; molecular, cellular and systemic studies on the biological effects of radiation; structural biology; med-

General and special funds—Continued

SCIENCE—Continued

ical applications of nuclear technology; and the Human Genome Program. Funding for the Human Genome program is provided to understand the genes identified in the Human Genome Project and to meet growing demand for sequencing in the broader scientific community. The program also supports science related to carbon sequestration and sequencing of genomes of microbes that use carbon dioxide to produce methane and hydrogen. In conjunction with the advanced scientific computing research program, a global systems application is continued to accelerate progress in coupled general circulation model development through use of enhanced computer simulation and modeling. The Genomics: GTL activity, aimed at understanding the composition and function of biochemical networks that carry out essential processes of living organisms, is funded at $67.5 million. In addition, project engineering design is begun for a GTL Protein Production and Tags facility.

Basic Energy Sciences.—The basic energy sciences (BES) program funds basic research in the physical, biological and engineering sciences that supports the Department's nuclear and non-nuclear technology programs. The BES program supports a substantial basic research budget for materials sciences, chemical sciences, energy biosciences, engineering and geosciences. The program supports a number of research areas that are unique within the Federal Government: in many basic research areas, such as materials science, funding provided by the BES program represents a large percentage, or even the sole source, of Federal funding. The request includes $29.2 million for hydrogen and fuel cell research as part of the President's Hydrogen Initiative.

The BES program also operates large national user research facilities, including synchrotron light and neutron sources, a combustion research facility, and smaller user facilities such as materials preparation and electron microscopy centers.

The BES budget request includes continued support to maintain utilization of the Department's large state-of-the-art national user facilities. The proposed funding will maintain the quality of service and availability of facility resources to users, including university and government scientists, as well as private companies who rely on unique BES facilities for their basic research needs. Research areas that will benefit from the facilities funding include structural biology, materials science, superconductor technology, and medical research and technology development.

In addition, the BES request includes $113.6 million to continue construction at Oak Ridge National Laboratory for the Spallation Neutron Source (SNS) to meet the Nation's neutron scattering needs. The request includes $7.6 million to continue design and fabrication of additional instruments beyond the initial instrument suite included in the construction project. The SNS will provide significant scientific, technical, and economic benefits that derive from neutron scattering and materials irradiation research. Reflecting the high priority given to nanoscale research, basic energy sciences funding for the multi-agency national nanotechnology program is $208.6 million and includes project engineering and design funding for the nanoscale science research center (NSRC) at Brookhaven National Laboratory and construction funding for NSRC's at the Lawrence Berkeley, Brookhaven, Oak Ridge, and Sandia National Laboratories. Equipment is funded for the NSRC at Argonne National Laboratory, where the State of Illinois is providing funding for the building. The request also includes $30.0 million to initiate long lead procurement activities for the Linac Coherent Light Source at the Stanford Linear Accelerator Center.

Fusion Energy Sciences.—The fusion energy sciences program continues to implement the recommendations of the reports by the National Research Council, the Secretary of Energy Advisory Board and recommendations of the Fusion Energy Science Advisory committee. The mission of the program is to advance plasma science, fusion science, and fusion technology. The program emphasizes the underlying basic research in plasma and fusion sciences, with the long-term goal of harnessing fusion as a viable energy source. The program centers on the following goals: understanding the physics of plasmas; identification and exploration of innovative and cost effective development paths to fusion energy; and exploration of the science and technology of energy producing plasmas, as a partner in an international effort.

The budget includes $38.0 million for the Department to prepare for participation in the International Thermonuclear Experimental Reactor (ITER) program, a burning plasma physics experiment that is an essential next step toward eventually developing fusion as a commercially viable energy source.

The budget request provides for support of basic research in plasma science in partnership with NSF, plasma containment research, and investigation of tokamak alternatives, along with continued operation of DIII–D, Alcator C-Mod, and the National Spherical Torus Experiment to develop a fuller understanding of the physics of magnetically confined plasma and to identify approaches that may improve the economical and environmental attractiveness of fusion. Fabrication of the new National Compact Stellarator experiment will continue at Princeton Plasma Physics Laboratory. The inertial fusion energy activity will be refocused around the scientific goals of high energy density plasma physics. Theory and modeling efforts will be supported to develop a predictive capability for the operation of fusion experiments. Enabling technology research will also be conducted in support of the science experiments.

Science laboratories infrastructure.—The goal of the science laboratories infrastructure program is to provide funds for rehabilitating, replacing or demolishing deficient common-use utilities, roads, and buildings and to correct environment, safety, and health deficiencies at the civilian science laboratories. The excess facilities disposal subprogram and the Oak Ridge Landlord activity are also funded here.

Advanced Scientific Computing Research (ASCR).—This program includes research in mathematical, information, and computational sciences. The purpose of the ASCR program is to support advanced computational research—applied mathematics, computer science, and networking—to enable the analysis, simulation and prediction of complex physical phenomena. The program also supports the operation of large supercomputer user facilities. The request includes research, integrated with other science programs, on application of computer simulation and modeling to science problems. The budget includes research funds to identify and address major architectural bottlenecks affecting the performance of existing and planned scientific applications for the next generation of high-end supercomputers.

Safeguards and security.—The mission of this program is to ensure appropriate levels of protection and provide against: unauthorized access, theft, diversion, loss of custody, or destruction of Department of Energy assets and hostile acts that may cause adverse impacts on fundamental science, or the health and safety of DOE and contractor employees, the public, or the environment. The request provides funding for physical protection, protective forces, physical security, protective systems, information security, cyber security, personnel security, materials control and accountability, and program management activities.

Workforce development for teachers and scientists.—The mission of this program is to train young scientists, engineers,

and technicians in the scientifically and technically advanced environment of the Office of Science national laboratories to meet the demand for a well-trained scientific and technical workforce, including the teachers that educate the workforce.

Object Classification (in millions of dollars)

Identification code 89–0222–0–1–251		2003 actual	2004 est.	2005 est.
	Direct obligations:			
	Personnel compensation:			
11.1	Full-time permanent	76	79	87
11.3	Other than full-time permanent	3	3	3
11.5	Other personnel compensation	3	1	1
11.9	Total personnel compensation	82	83	91
12.1	Civilian personnel benefits	16	17	19
13.0	Benefits for former personnel	1	1	1
21.0	Travel and transportation of persons	2	3	3
23.3	Communications, utilities, and miscellaneous charges	3	4	5
25.1	Advisory and assistance services	11	7	7
25.2	Other services	38	75	88
25.3	Other purchases of goods and services from Government accounts	5	13	14
25.4	Operation and maintenance of facilities	1,754	574	603
25.5	Research and development contracts	61	1,354	1,362
25.7	Operation and maintenance of equipment		191	170
26.0	Supplies and materials	1	1	1
31.0	Equipment	236	219	227
32.0	Land and structures	360	311	322
41.0	Grants, subsidies, and contributions	720	657	519
99.0	Direct obligations	3,290	3,510	3,432
99.5	Below reporting threshold	2		
99.9	Total new obligations	3,292	3,510	3,432

Personnel Summary

Identification code 89–0222–0–1–251		2003 actual	2004 est.	2005 est.
1001	Total compensable workyears: Civilian full-time equivalent employment	901	972	1,014

Energy Supply

For Department of Energy expenses including the purchase, construction, and acquisition of plant and capital equipment, and other expenses necessary for energy supply activities in carrying out the purposes of the Department of Energy Organization Act (42 U.S.C. 7101 et seq.), including the acquisition or condemnation of any real property or any facility or for plant or facility acquisition, construction, or expansion, and the purchase of not to exceed [12] *9* passenger motor vehicles for replacement only, [including two buses; $737,537,000] *and one ambulance, $834,284,000*, to remain available until expended. *(Energy and Water Development Appropriations Act, 2004.)*

[Sec. 132. For an additional amount for the "Energy Supply" account of the Department of Energy in the Energy and Water Development Appropriations Act, 2004, there is appropriated $750,000, to remain available until expended, for the Energy Center of Wisconsin Renewable Fuels Project; $500,000, to remain available until expended, for the Wind Energy Transmission Study; $250,000, to remain available until expended, for the White Pine County, Nevada, Public School System biomass conversion heating project; $250,000 to remain available until expended, for the Lead Animal Shelter Animal Campus renewable energy demonstration project; $3,000,000, to remain available until expended, for the establishment of a Hawaii Hydrogen Center for Development and Deployment of Distributed Energy Systems; and $250,000, to remain available until expended, for the Eastern Nevada Landscape Coalition for biomass restoration and science-based restoration.] *(Division H, H.R. 2673 Consolidated Appropriations Bill, FY 2004.)*

Program and Financing (in millions of dollars)

Identification code 89–0224–0–1–999		2003 actual	2004 est.	2005 est.
	Obligations by program activity:			
00.01	Hydrogen technology	38	82	95
00.02	Solar energy	90	83	80
00.04	Wind energy	42	41	42
00.05	Hydropower	5	5	6
00.06	Geothermal technology	28	26	26
00.07	Biomass and biorefinery systems R&D	81	90	73
00.08	Intergovernmental activities		16	16
00.09	Electric Energy Systems and Storage	78		
00.10	Departmental energy management program		2	2
00.11	National Renewable Energy Lab	6		
00.12	Facilities and infrastructure		13	11
00.13	Program direction	15	12	21
00.14	Renewable Program Support		5	
00.15	National Climate Change Technology Initiative			3
00.16	Renewable energy program support and implementation	21		
00.91	Total, Energy efficiency and renewable energy	404	375	375
01.02	Electric transmission and distribution		88	91
01.03	Nuclear energy research and development	244	310	299
01.04	Environment, safety and health	23	24	30
01.05	Legacy Management			31
01.06	Future Liabilities			3
01.07	Civilian Radioactive Waste Spent Nuclear Fuel Management			5
01.91	Total, Other Energy Supply	267	422	459
08.00	Total, direct program	671	797	834
09.10	Reimbursable program	724	1,320	1,300
10.00	Total new obligations	1,395	2,117	2,134
	Budgetary resources available for obligation:			
21.40	Unobligated balance carried forward, start of year	74	114	
22.00	New budget authority (gross)	1,430	2,003	2,134
22.10	Resources available from recoveries of prior year obligations	4		
23.90	Total budgetary resources available for obligation	1,508	2,117	2,134
23.95	Total new obligations	−1,395	−2,117	−2,134
24.40	Unobligated balance carried forward, end of year	114		
	New budget authority (gross), detail:			
	Discretionary:			
40.00	Appropriation	701	757	834
40.35	Appropriation permanently reduced	−5	−4	
41.00	Transferred to other accounts	−7		
43.00	Appropriation (total discretionary)	689	753	834
	Spending authority from offsetting collections:			
68.00	Offsetting collections (cash)	675	1,250	1,300
68.10	Change in uncollected customer payments from Federal sources (unexpired)	66		
68.90	Spending authority from offsetting collections (total discretionary)	741	1,250	1,300
70.00	Total new budget authority (gross)	1,430	2,003	2,134
	Change in obligated balances:			
72.40	Obligated balance, start of year	456	497	650
73.10	Total new obligations	1,395	2,117	2,134
73.20	Total outlays (gross)	−1,273	−1,964	−2,079
73.31	Obligated balance transferred to other accounts	−9		
73.40	Adjustments in expired accounts (net)	−3		
73.45	Recoveries of prior year obligations	−4		
74.00	Change in uncollected customer payments from Federal sources (unexpired)	−66		
74.40	Obligated balance, end of year	497	650	705
	Outlays (gross), detail:			
86.90	Outlays from new discretionary authority	985	1,589	1,675
86.93	Outlays from discretionary balances	288	375	404
87.00	Total outlays (gross)	1,273	1,964	2,079
	Offsets:			
	Against gross budget authority and outlays:			
	Offsetting collections (cash) from:			
88.00	Federal sources	−412	−675	−700
88.40	Non-Federal sources	−263	−575	−600
88.90	Total, offsetting collections (cash)	−675	−1,250	−1,300
	Against gross budget authority only:			
88.95	Change in uncollected customer payments from Federal sources (unexpired)	−66		
	Net budget authority and outlays:			
89.00	Budget authority	689	753	834
90.00	Outlays	598	714	779