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SENATE

{ REPORT
112-75

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS BILL, 2012

SEPTEMBER 7, 2011.—Ordered to be printed

Mrs. FEINSTEIN, from the Committee on Appropriations,
submitted the following

REPORT

[To accompany H.R. 2354]

The Committee on Appropriations, to which was referred the bill (H.R. 2354) making appropriations for energy and water development and related agencies for the fiscal year ending September 30, 2012, and for other purposes, reports the same to the Senate with an amendment and recommends that the bill as amended do pass.

New obligatory authority

Total of bill as reported to the Senate	\$32,765,568,000
Amount of 2011 appropriations	31,789,895,000
Amount of 2012 budget estimate	36,575,809,000
House allowance	30,224,061,000
Bill as recommended to Senate compared to—	
2011 appropriations	+ 975,673,000
2012 budget estimate	– 3,810,241,000
House allowance	+ 2,541,507,000

TITLE III

DEPARTMENT OF ENERGY

The Committee recommends \$25,548,976,000 for the Department of Energy. Within these funds, \$11,050,000,000 is for the National Nuclear Security Administration [NNSA]. The Committee's highest priority is accelerating breakthroughs in clean energy technologies to reduce the Nation's dependence on foreign oil and developing carbon-free sources of energy that will change the way the United States produces and consumes energy. Increases to ARPA-E should accelerate the commercialization of these technologies and a shift of funding in the Office of Science toward goal-oriented research will focus limited investments. The Committee also provides credit subsidies for renewable loan guarantees to encourage the early commercial production and use of new or significantly improved energy efficient technologies. Moreover, the Committee recommends an increase of \$528,000,000 above fiscal year 2011 enacted levels for NNSA to address critical national security missions. The increase would allow NNSA to stay on track to meet its goal of securing all vulnerable nuclear materials in 4 years to protect the United States against nuclear terrorism, continue modernizing the nuclear weapons complex consistent with the Nuclear Posture Review and New START Treaty, and develop a new reactor core for the OHIO-class submarine.

EXASCALE INITIATIVE

The Committee supports the Department's initiative to develop exascale computing—1,000 times more powerful than today's most powerful computer. The Committee recommends \$126,000,000 to support this initiative, which includes \$90,000,000 for the Office of Science and \$36,000,000 for the National Nuclear Security Administration. The Committee encourages the Office of Science and the National Nuclear Security Administration to continue collaborating on the development of exascale computing to take advantage of each other's expertise and avoid duplication of effort. The Committee understands that the path to exascale computing will be extremely challenging and will require significant research and development breakthroughs. For example, an exaflop system made entirely out of today's technology would probably cost \$100,000,000,000, require \$1,000,000,000 a year to operate, need its own dedicated power plant to power the computing system, and be very unreliable. Despite these challenges, the Department has set an ambitious goal of 2018 to deploy the first exascale system. The Committee directs the Department's Undersecretary for Science and the National Nuclear Security Administration [NNSA] Administrator to submit within 120 days of enactment of this act, a joint, integrated strategy and program plan with estimated budg-

et needs through 2018 on how the Office of Science's Advanced Scientific Computing Research and NNSA's Advanced Simulation and Computing programs will share responsibilities and coordinate research and development activities to reach exascale computing required for national security, energy, environmental, and other science missions and to retain the United States' global leadership and competitiveness in advanced computing.

PROJECT MANAGEMENT

In November 2010, the President's Council of Advisors on Science and Technology recommended that the Secretary of Energy extend procedures used successfully in ARPA-E to all DOE energy programs. For example, ARPA-E uses a rigorous peer review process to select the most deserving projects and from conception to the award of the contract it only takes 6 to 8 months, much faster than other DOE energy programs. The Committee directs the Secretary of Energy within 120 days of enactment of this act to submit a report on how the Department will implement the Council of Advisors' recommendation to extend ARPA-E processes and procedures to all DOE energy programs.

REPROGRAMMING GUIDELINES

The Department of Energy is directed to operate in a manner fully consistent with the following reprogramming guidelines. A reprogramming request must be submitted to the Committees on Appropriations for consideration before any implementation of a reorganization proposal which includes moving previous appropriations between appropriation accounts. The Department is directed to inform the Committees promptly and fully when a change in program execution and funding is required during the fiscal year. To assist the Department in this effort, the following guidance is provided for programs and activities funded in the Energy and Water Development and Related Agencies Appropriations Act. The Department is directed to follow this guidance for all programs and activities unless specific reprogramming guidance is provided for a program or activity.

Definition.—A reprogramming includes the reallocation of funds from one activity to another within an appropriation, or any significant departure from a program, project, activity, or organization described in the agency's budget justification as presented to and approved by Congress. For construction projects, a reprogramming constitutes the reallocation of funds from one construction project identified in the justifications to another project or a significant change in the scope of an approved project.

Any reallocation of new or prior year budget authority or prior year deobligations must be submitted to the Committees in writing and may not be implemented prior to approval by the Committees on Appropriations.

Although the Committee recognizes the use of uranium transfers to accelerate cleanup at Federal sites, the Committee expresses continued concern with the Department’s lack of oversight and transparency of this program. The Government Accountability Office [GAO] has twice found DOE’s administration of the program in violation of Federal law. According to GAO, the Department has violated the miscellaneous receipts statute, which requires Government agencies to deposit money received from any source into the Treasury. The Committee directs the Secretary to ensure the Department’s uranium transfer program is in compliance with Federal law.

The Committee is also frustrated by the Department’s refusal to submit the program to congressional oversight. The Department continues to ignore the Committee’s requests to be notified of basic information about the program, such as the dates and amounts of uranium prior to the consummation of a transfer. Although the Department had previously requested to be allowed to voluntarily notify the Committee of information regarding the program, it has failed to do so, and the Committee accordingly includes language to codify notification requirements and expects the Department to adhere strictly to them. Because the Department is dealing with such significant sums of taxpayer dollars in an off-budget manner, it should expect Congress to scrutinize this program.

The Committee also expresses concern about the Department’s market impact analyses required under the USEC Privatization Act prior to any sale or transfer of uranium. The scope of the previous market impact analysis included the calendar years of 2011, 2012, and 2013. The price of uranium continues to be volatile, and attempting to make predictions months in advance—let alone 3 years—is extremely speculative and may not justify a determination that certain transfers would not adversely affect the uranium industry. The Committee includes language to allow the Department to cover only 2 years in the future for each market impact analysis.

Finally, the Committee includes a requirement for the Department to conduct an economic feasibility study on the re-enrichment of depleted uranium tailings that are located at Federal sites. Although there are currently 60,000 cylinders of depleted uranium located at Federal sites, the Department has no updated plan or timeline for either re-enriching high-assay tails or disposing of them. The Department is directed to consider the economic feasibility of re-enriching these materials, taking into account factors including safety, cost, national security, the costs of storage and disposal, and the enrichment capacity at domestic sites. The Department is directed to prepare and submit this economic feasibility study to the House and Senate Committees on Appropriations prior to December 31, 2011.

SCIENCE

Appropriations, 2011	¹ \$4,857,665,000
Budget estimate, 2012	5,416,114,000
House allowance	4,800,000,000
Committee recommendation	4,842,665,000

¹ Does not include rescission of \$15,000,000 under Public Law 112–10.

The Committee recommends \$4,842,665,000. The Committee believes this level of funding will maintain U.S. leadership in science and technology during a time of significant funding constraints. Investments in basic research will lead to new and improved energy technologies and the construction and operation of new, large-scale scientific facilities will be vitally important for many areas of science as well as private industry, such as pharmaceutical and aerospace companies. Funding for advanced computing will also position the United States to maintain international leadership in scientific computing and simulation over the next decade.

Office of Science Priorities.—The Committee commends the Office of Science for identifying three clear priorities for basic scientific research:

- the discovery and design of new materials for the generation, storage, and use of energy,
- better understanding of microorganisms and plants for improved biofuels production, and
- the development and deployment of more powerful computing capabilities to take advantage of modeling and simulation to advance energy technologies and maintain U.S. economic competitiveness.

Office of Science Advisory Committee.—The Committee encourages the Office of Science to continue prioritizing within its broad scientific portfolio to help accelerate the discovery of new energy technologies for a clean energy future, especially during a time of fiscal constraints. The Committee also encourages the Office of Science to establish an advisory committee that would help the Secretary of Energy and the Director of the Office of Science prioritize among the different areas of basic research. An independent advisory committee for the Office of Science could provide valuable advice at a time of declining budgets on research priorities, determining the proper balance among the different disciplines, and what areas of basic research would best maintain U.S. scientific leadership and a technical workforce.

Project Management.—While scientific exploration without un-inspired goals is important to advancing science, innovation, and American intellectual property, Department of Energy funded research is ultimately centered on energy-focused goals. Within that context, most Office of Science research should have concrete goals, and most research should have measurable performance. The Department is therefore directed to create a performance ranking of all ongoing multi-year research projects across Basic Energy Sciences, Fusion Energy, High Energy Physics, Nuclear Energy, Biological and Environmental Research, and Advanced Supercomputing Research, including those at universities, national laboratories, Energy Frontier Research Centers, Energy Innovation Hubs and other recipients, by comparing current performance with original project goals.

BASIC ENERGY SCIENCES

The Committee recommends \$1,693,860,000 for Basic Energy Sciences. Of these funds, \$151,400,000 is provided for construction activities as requested in the budget. The remaining \$1,542,460,000 is for research. Within the research funds provided, up to

\$100,000,000 shall be used to support the 46 Energy Frontier Research Centers. The Committee encourages the Department to continue interim science and management reviews during these centers' 5-year award period to maintain proper oversight and ensure that the centers continue to pursue fundamental research needed to accelerate breakthroughs in clean energy technologies.

The Committee recommends \$24,300,000 for the Fuels from Sunlight energy innovation hub and \$20,000,000 for a new Hub for Batteries and Energy Storage. The Committee also recommends \$10,000,000 for predictive modeling of internal combustion engines. In 2007, the engine company Cummins achieved a milestone in engine design by bringing a diesel engine to market solely with computer modeling. The diesel engine is being used in more than 200,000 Dodge Ram pickup trucks. The only testing was after-the-fact to confirm performance, which significantly reduced development time and cost. Building on this success, developing more advanced computer models for engines holds the promise of increasing the efficiency of current engines in the short to medium term by 50 percent for automobiles and 30 percent for trucks, which would reduce carbon emissions and the country's dependence on foreign oil. This research would also demonstrate the feasibility of using renewable fuels, such as biofuels, in internal combustion engines.

The Committee also recommends \$37,000,000 for major items of equipment, including \$11,500,000 for new instruments and \$5,500,000 for a power upgrade at the Spallation Neutron Source at the Oak Ridge National Laboratory, \$8,000,000 for design and engineering work to enhance the capabilities of the Linac Coherent Light Source at SLAC, and \$12,000,000 for equipment for the new National Synchrotron Light Source facility at Brookhaven. The Committee recommends no funding for upgrades to the Advanced Photon Source at Argonne National Laboratory or to build a new electron microscope. The Committee is concerned about outyear liabilities for major construction projects and upgrades to facilities at a time of flat or declining budgets. Upgrades to the Advanced Photon Source and the Linac Coherent Light Source both have estimated costs of over \$300,000,000. The Office of Science should consider phasing these projects to reflect the highest priority or demonstrate how it can build both concurrently without significant impacts to basic research.

The Committee recommends \$20,000,000 for the Experimental Program to Stimulate Competitive Research [EPSCoR] to support science and technology programs in States that have historically received relatively less Federal research funding.

The Committee directs the Office of Basic Energy Sciences [BES] to implement the recommendations in the April 2010 Basic Energy Sciences Advisory Committee report on ways to strengthen the link between basic research and industry. One of the report's main conclusions was that more direct feedback, communication, and collaboration between industrial and BES scientists was needed to better identify scientific roadblocks to emerging clean energy technologies, address the scientific challenges, and transfer the results to industry for commercialization. BES-supported scientists need to be better informed of the detailed scientific issues facing industry

and industry more aware of BES capabilities and how to utilize them.

The Committee understands that catalysis is the key enabling technology for transportation fuel production today and further advances in catalysis are required to develop advanced fuels from domestic sources that use the country's existing energy infrastructure and are the lowest cost path to reducing oil imports. The Committee encourages the Office of Science to continue catalysis research. The Committee also encourages the Office of Science in partnership with universities to support research and development of novel device materials for alternative energy applications.

The Committee encourages the Department of Energy in partnership with universities to support research and development of advanced nanostructure polymer-particle composite materials for improved ultra-capacitor devices. The Committee also encourages the Department to continue funding to support research and development needs of graduate and post-graduate science programs at Historically Black Colleges and Universities.

BIOLOGICAL AND ENVIRONMENTAL RESEARCH

The Committee recommends \$621,823,000 for Biological and Environmental Research. The Committee recommends \$295,079,000 for climate and environmental sciences. The Committee recognizes the unique contributions of this program in advancing climate research. DOE has stationary and mobile facilities around the world that collect data on climate change and the world's best high-performance computers to develop sophisticated climate models to help decisionmakers understand the impact of climate change. Despite advances in climate models, there is still uncertainty in predicting how climate change may impact future energy use, land use, food production, and water resources and affect regional stability. The Committee supports DOE's efforts in improving the reliability and accuracy of climate models by resolving two major areas of uncertainty—the effect of clouds and aerosols on climate. The Committee encourages DOE to continue using data obtained from satellite sensors operated by other Federal agencies in addition to ground based data to produce the most accurate and reliable information for climate modeling.

The Committee also supports research related to producing biomass-based biofuels to reduce the country's dependence on fossil-based transportation fuels. The Committee understands that making efficient use of organic materials to make biofuels continues to be a major challenge. The Committee agrees that a top priority should be developing biomass feedstocks that can produce the most biomass at the least cost and take into account environmental factors, such as water consumption, competition with food production, and insect resistance. The Committee believes that synthetic biology, which involves designing new biological parts, devices and systems for specific purposes, will accelerate major breakthroughs not only in biofuels, but also in other important energy and environmental missions of the Department. The Committee directs the Secretary of Energy, not later than 9 months after enactment of this act, in consultation with other relevant Federal agencies, the academic community, research based nonprofit entities, and the

private sector, to submit a comprehensive synthetic biology plan for federally supported research and development activities that will support the energy and environmental missions of the Department and enable a competitive synthetic biology industry in the United States. The plan shall assess the need to create a database for synthetic biology information, the need and process for developing standards for biological parts, components, and systems, and funding requirements for implementing the plan.

Within the funds provided, \$20,000,000 shall be used for radiobiology to help determine health risks from exposures to low levels of ionizing radiation to properly protect radiation workers and the general public. The Fukushima Daiichi disaster in Japan is an opportunity to learn about the impacts of the disaster on human health and apply lessons learned to make more informed decisions on protection if a similar accident occurs in the future, including dose trip points for evacuation and shelter-in-place orders. Within the funds provided, \$12,000,000 is to continue nuclear medicine research with human application. The Committee notes that DOE-funded nuclear medicine research has led to numerous achievements in patient care, such as cutting-edge nuclear medicine imaging and therapy procedures, including PET scans, that are crucial for identifying the presence of cancer in the body and cardiac stress tests to analyze heart function.

ADVANCED SCIENTIFIC COMPUTING RESEARCH

The Committee recommends \$441,619,000 for Advanced Scientific Computing Research. The Committee recommends \$90,000,000 for the exascale initiative to spur U.S. innovation and increase the country's ability to address critical national challenges. The Committee understands that exascale computing will help maintain U.S. industrial competitiveness. In particular, high-tech industries such as transportation, aerospace, nuclear energy, and petroleum will increasingly rely on high-performance computing, especially when traditional experiments would be impossible, dangerous, or inordinately costly to perform.

The Committee understands that the Department will have the lead Government role in computing research and development. The Department's role in developing more advanced computing platforms is even more important with the elimination of the DARPA High Performance Computing program. For this reason, the Committee supports the budget request for the Leadership Computing Facilities, which will enable Oak Ridge and Argonne National Laboratories to move forward with upgrades to their Cray XT5 and IBM Glue Gene/P systems, respectively. These upgrades will ensure that they remain on track to be the most powerful supercomputers in the world and represent an important step in the Department's research effort to develop the first exascale system.

HIGH ENERGY PHYSICS

The Committee recommends \$780,200,000 for High Energy Physics. With the shutdown of the Tevatron at Fermilab at the end of fiscal year 2011 and the successful operation of the most powerful energy particle collider in the world, the Large Hadron Collider in Switzerland, U.S. dominance of the energy frontier has come to an

end. However, the Committee understands that the United States has an opportunity to lead in the intensity frontier. Specifically, the United States has unique capabilities that should be exploited to develop a world-leading program of neutrino science to understand the role neutrinos play in the evolution of the universe and design new particle beams and highly sensitive detectors to advance this area of science. The Committee directs the Office of Science to submit a report not later than 180 days of enactment that lays out

- the expected benefits of intensity frontier science,
- a strategy for maintaining the U.S. lead, and
- the funding needs over the next 10 years, including construction activities, of implementing the proposed strategy.

The Committee provides no construction funds for the Long Baseline Neutrino Experiment. The Committee is concerned that this project is not mature enough for construction because a location for this experiment in an underground laboratory has not yet been selected and the decision of the National Science Foundation to discontinue construction funding for the Deep Underground Science and Engineering Laboratory in South Dakota has created uncertainty about the future of the project. In addition, the Office of Science has not yet selected a technology, which affects where the experiment can be located and total cost.

The Committee also recommends \$15,000,000 as requested—\$10,000,000 from the High Energy Physics program and \$5,000,000 from the Nuclear Physics program—to support minimal, sustaining operations at the Homestake Mine in South Dakota. The Committee is aware of the National Science Foundation’s decision. However, the Committee encourages the Office of Science to examine cost-effective options for using the mine to stage critical experiments related to neutrino and dark matter research.

The Committee understands that powerful new accelerator technologies created for basic science and developed by industry will produce particle accelerators with the potential to address key economic and societal issues confronting our Nation. However, the Committee is concerned with the divide that exists in translating breakthroughs in accelerator science and technology into applications that benefit the marketplace and American competitiveness. The Committee directs the Department to submit a 10-year strategic plan by June 1, 2012 for accelerator technology research and development to advance accelerator applications in energy and the environment, medicine, industry, national security, and discovery science. The strategic plan should be based on the results of the Department’s 2010 workshop study, *Accelerators for America’s Future*, that identified the opportunities and research challenges for next-generation accelerators and how to improve coordination between basic and applied accelerator research. The strategic plan should also identify the potential need for demonstration and development facilities to help bridge the gap between development and deployment.

NUCLEAR PHYSICS

The Committee recommends \$550,114,000 for Nuclear Physics. The Committee recommends \$55,000,000 in construction funds for the Continuous Electron Beam Accelerator Facility, which the Nu-

clear Physics Advisory Committee concluded was the highest priority for the Nation's nuclear physics program. The Committee also recommends \$24,000,000 for the Facility for Rare Isotope Beams.

FUSION ENERGY SCIENCES

The Committee recommends \$335,463,000 for Fusion Energy Sciences. The Department is directed to submit a 10-year plan, not later than 12 months after enactment of this act, on the Department's proposed research and development activities in magnetic fusion under four realistic budget scenarios. The report shall (1) identify specific areas of fusion energy research and enabling technology development in which the United States can and should establish or solidify a lead in the global fusion energy development effort and (2) identify priorities for facility construction and facility decommissioning under each of the four budget scenarios. The Department is encouraged to use a similar approach adopted by the Particle Physics Project Prioritization Panel that developed a 10-year strategic plan for the Department's high energy physics program.

Of the \$24,741,000 requested for the High Energy Density Laboratory Plasma program, \$12,000,000 shall be spent on heavy-ion fusion, laser-driven fusion, and magneto-inertial fusion to be evenly distributed among these three areas of science. A recent Department of Energy report on scientific grand challenges for fusion energy sciences identified these three areas of research as critical toward advancing inertial fusion energy. In particular, the Committee does not understand why the Department would redirect funding for magnetized high-energy-density plasma research after the panel report found that this approach has the potential to significantly reduce power requirements compared to conventional inertial confinement fusion and could permit fusion development without building multi-billion dollar facilities.

The Committee is concerned about the impact ITER will have on the domestic fusion energy budget. Based on DOE budget estimates, DOE will be requesting between \$300,000,000 to \$400,000,000 a year from fiscal years 2014 through 2016 to help build ITER. If current trends of declining or flat budgets continue, almost all of the fusion energy sciences budget will be consumed by ITER. The Committee encourages DOE to find a solution to this problem without compromising the scientific and technical expertise residing at U.S. universities, labs, and industrial partners.

The Committee encourages the Office Fusion Energy Sciences Program to closely collaborate with the Office of Basic Energy Sciences, the Office of Advanced Scientific Computing Research, the Office of Nuclear Energy, and the National Nuclear Security Administration to address mutual needs for technology development in magnetic fusion, inertial fusion, and next-generation fusion reactor concepts. One focus area of these collaborations should be on identifying, characterizing, and developing new materials that can endure the intense neutron and heat fluxes expected in these reactor environments. The Committee expects the Department to consider these nuclear technology needs as it develops its prioritization plan.

The Committee also encourages the fusion energy program take continue taking advantage of high performance computing to address scientific and technical challenges on the path to fusion energy. The Committee supports the Fusion Simulation Program to provide experimentally validated predictive simulation capabilities that are critical for ITER and other current and planned toroidal fusion devices. Given current and future budget constraints, the Committee views this initiative as critical to maintain U.S. world leadership in fusion energy in a cost-effective manner.

SCIENCE LABORATORIES INFRASTRUCTURE

The Committee provides \$136,800,000 to support infrastructure activities. Within these funds, \$25,000,000 shall be used to accelerate excess facility clean up at the national laboratories, which may include remediation of seismically deficient buildings and areas in need of modernization.

SAFEGUARDS AND SECURITY

The Committee provides \$82,000,000 for Safeguards and Security activities.

SCIENCE PROGRAM DIRECTION

The Committee provides \$180,786,000 for the Office of Science Program Direction. No funds shall be used to hire new site office personnel, except for field staff at the Integrated Support Centers in Chicago and Oak Ridge.

SCIENCE WORKFORCE DEVELOPMENT

The Committee provides \$20,000,000. Of these funds, up to \$7,500,000 shall be available for the graduate fellowship program. The Committee encourages the Office of Science to monitor the impact of this program and demonstrate whether students continue to pursue careers in scientific and technical fields. The Committee commends the Office of Science for terminating student and teacher education programs that did not have clear program goals and were not effective in encouraging students to pursue careers in science, technology, engineering, and math. Limited resources will be better targeted to programs that are most effective in developing a skilled scientific and technical workforce to address energy, environmental, and national security challenges. As the Office of Science evaluates the impact of workforce development activities and makes changes to the program, the Committee urges the Office of Science to look at other uses for these funds, including the Distinguished Scientist program authorized in the America COMPETES bill.

NUCLEAR WASTE DISPOSAL

Appropriations, 2011	(¹)
Budget estimate, 2012	
House allowance	\$25,000,000
Committee recommendation	

¹ Does not include rescission of \$2,800,000 under Public Law 112-10.

DEPARTMENT OF ENERGY—Continued
[In thousands of dollars]

	Enacted	Budget estimate	House allowance	Committee recommendation	Committee recommendation compared to—		
					Enacted	Budget estimate	House allowance
Portsmouth							
Undistributed funds	506,984	243,642	188,473	188,473	+ 188,473	— 55,169	
Rescission	— 9,900				— 506,984		
					+ 9,900		
TOTAL, UED&D FUND/URANIUM INVENTORY CLEANUP	497,084	504,169	449,000	429,000	— 68,084	— 20,000	
SCIENCE							
Advanced scientific computing research	421,997	465,600	427,093	441,619	+ 19,622	— 23,981	
Basic energy sciences:							
Research	1,526,898	1,833,600	1,547,343	1,542,460	+ 15,562	— 291,140	
Construction:							
07—SC—06 Project engineering and design [PED] National Synchro-	151,297	151,400	140,802	151,400	+ 103		
tron light source II [NSLS-II]						+ 10,598	
Subtotal, Basic energy sciences	1,678,195	1,985,000	1,688,145	1,693,860	+ 15,665	— 291,140	
Biological and environmental research:							
Biological systems science	316,744	376,262		326,744	+ 10,000	— 49,518	
Climate and environmental sciences	295,079	341,638		295,079		— 46,559	
Research			547,075			— 547,075	
Subtotal, Biological and environmental research	611,823	717,900	547,075	621,823	+ 10,000	— 96,077	
Fusion energy sciences program	375,463	399,700	406,000	335,463	— 40,000	— 64,237	
High-energy physics:							
Research	795,420	756,200	759,070	756,200	— 39,220		
Construction:							
11—SC—40 Project engineering and design [PED] long baseline neu-							
trino experiment, FNAL		17,000	15,810			— 17,000	
11—SC—41 Project engineering and design [PED] muon to electron							
conversion experiment, FNAL		24,000	22,320	24,000	+ 24,000	+ 1,680	

Subtotal	41,000	38,130	24,000	+ 24,000	- 17,000	- 14,130
Subtotal, high-energy physics	795,420	797,200	780,200	- 15,220	- 17,000	- 17,000
Nuclear physics: Operations and maintenance	504,186	512,000	495,114	- 9,072	- 44,186	- 16,886
Construction: 06-SC-01 Project engineering and design (PED) 12 GeV continuous electron beam accelerator facility upgrade, Thomas Jefferson Na- tional Accelerator facility (was project 07-SC-001), Newport News, Virginia	35,928	66,000	55,000	+ 19,072	- 11,000	+ 15,000
Subtotal, Nuclear physics	540,114	552,000	550,114	+ 10,000	- 55,186	- 1,886
Workforce development for teachers and scientists	22,600	17,849	20,000	- 2,600	- 15,600	+ 2,151
Science laboratories infrastructure: Infrastructure support: Payment in lieu of taxes	1,382	1,385	1,385	+ 3	.....	.....
Excess facility disposal .....	.....	.....	25,000	+ 25,000	+ 25,000	+ 25,000
Oak Ridge landlord	5,249	5,493	5,493	+ 244	.....	.....
Subtotal	6,631	6,878	31,878	+ 25,247	+ 25,000	+ 25,000
Construction: 11-SC-71 Utility infrastructure modernization at TJNAF .....	.....	.....	12,086	+ 12,086	+ 12,086	+ 12,086
12-SC-70 Science and user support building, SLAC .....	.....	10,273	.....	.....	- 12,086	- 10,273
10-SC-70 Research support building and infrastructure moderniza- tion, SLAC	40,694	11,182	12,024	- 28,670	.....	+ 842
10-SC-71 Energy sciences building, ANL	14,970	37,200	40,000	+ 25,030	.....	+ 2,800
10-SC-72 Renovate science laboratory, Phase II, BNL	14,970	14,415	15,500	+ 530	.....	+ 1,085
09-SC-72 Seismic life-safety, modernization and replacement of general purpose buildings Phase 2, PED/Construction, LBNL	20,063	12,066	12,975	- 7,088	.....	+ 909
09-SC-74, Technology and engineering development facilities PED, TJNAF	28,419	11,473	12,337	- 16,082	.....	+ 864
Subtotal	119,116	96,609	104,922	- 14,194	.....	+ 8,313
Subtotal, Science laboratories infrastructure	125,747	103,487	136,800	+ 11,053	+ 25,000	+ 33,313
Safeguards and security	83,786	83,900	82,000	- 1,786	- 1,900	- 1,900

DEPARTMENT OF ENERGY—Continued
[In thousands of dollars]

	Enacted	Budget estimate	House allowance	Committee recommendation	Committee recommendation compared to—	
					Enacted	Budget estimate
Science program direction:						
Science program direction	202,520	216,863	.....	180,786	-21,734	+180,786
Headquarters .....	.....	.....	78,028	.....	.....	-78,028
Office of Science and Technical Information .....	.....	.....	7,700	.....	.....	-7,700
Field offices .....	.....	.....	94,272	.....	.....	-94,272
Subtotal, Science program direction	202,520	216,863	180,000	180,786	-21,734	+786
Subtotal, Science	4,857,665	5,418,863	4,802,749	4,842,665	-15,000	+39,916
Rescission	-15,000	.....	.....	.....	+15,000	.....
Use of prior year balances .....	.....	-2,749	-2,749	.....	.....	+2,749
TOTAL, SCIENCE	4,842,665	5,416,114	4,800,000	4,842,665	-573,449	+42,665
NUCLEAR WASTE DISPOSAL						
Repository program .....	.....	.....	20,000	.....	.....	-20,000
Program direction .....	.....	.....	5,000	.....	.....	-5,000
Rescission	-2,800	.....	.....	.....	+2,800	.....
TOTAL, NUCLEAR WASTE DISPOSAL	-2,800	.....	25,000	.....	+2,800	-25,000
ADVANCED RESEARCH PROJECTS AGENCY-ENERGY						
ARPA-E projects .....	.....	521,943	80,000	.....	.....	-80,000
Program direction .....	.....	28,068	20,000	.....	.....	-20,000
Undistributed funds .....	.....	.....	.....	.....	.....	+250,000
Floor amendment	179,640	.....	79,640	250,000	+70,360	-79,640
TOTAL, ADVANCED RESEARCH PROJECTS AGENCY-ENERGY	179,640	550,011	179,640	250,000	+70,360	+70,360

GENERAL PROVISIONS—DEPARTMENT OF ENERGY

The following list of general provisions is recommended by the Committee. The recommendation includes several provisions which have been included in previous Energy and Water Appropriations Acts and new provisions as follows:

Section 301. Language is included on unexpended balances.

Section 302. Language is included on user facilities.

Section 303. Language is included specifically authorizing intelligence activities pending enactment of the fiscal year 2012 Intelligence Authorization Act.

Section 304. The Committee has included a provision related to 5-year budgeting.

Section 305. The Committee has included language related to loan guarantee co-pay.

Section 306. Language is included related to the minor construction threshold.

Section 307. The Committee has included language related to minor construction threshold.

Section 308. The Committee has included a provision on mandatory funding.

Section 309. Language is included related to contractor pay freeze.

Section 310. The Committee has included a provision on lighting standards.

Section 311. The Committee has included a provision on the barter of uranium.

Section 312. The Committee has included a provision on the use of metering stations.