

ENERGY AND WATER DEVELOPMENT APPROPRIATIONS
BILL, 2012

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the Union and ordered to be printed

Mr. FRELINGHUYSEN, from the Committee on Appropriations,
submitted the following

R E P O R T

together with

ADDITIONAL VIEWS

[To accompany H.R. 2354]

The Committee on Appropriations submits the following report in
explanation of the accompanying bill making appropriations for en-
ergy and water development for the fiscal year ending September
30, 2012, and for other purposes.

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SUMMARY OF ESTIMATES AND RECOMMENDATIONS

The Committee has considered budget estimates, which are contained in the Budget of the United States Government, Fiscal Year 2012. The following table summarizes appropriations for fiscal year 2011, the budget estimates, and amounts recommended in the bill for fiscal year 2012.

COMPARATIVE STATEMENT OF NEW BUDGET (OBLIGATIONAL) AUTHORITY FOR 2011
AND BUDGET REQUESTS AND AMOUNTS RECOMMENDED IN THE BILL FOR 2012
(Amounts in thousands)

	FY 2011 Enacted	FY 2012 Request	Bill /1	Bill vs. Enacted	Bill vs. Request
Title I, Department of Defense - Civil.....	4,857,213	4,573,000	4,768,406	-88,807	+195,406
Title II, Department of the Interior.....	1,094,525	1,051,380	934,000	-160,525	-117,380
Title III, Department of Energy.....	25,591,176	30,683,802	24,740,746	-850,430	-5,943,056
Title IV, Independent Agencies.....	246,981	267,627	266,575	+19,594	-1,052
Subtotal.....	31,789,895	36,575,809	30,709,727	-1,080,168	-5,866,082
Scorekeeping adjustments.....	-107,865	-36,000	-71,000	+36,865	-35,000
Grand total for the bill.....	31,682,030	36,539,809	30,638,727	-1,043,303	-5,901,082

1/ Excludes emergency appropriations

INTRODUCTION

The Energy and Water Development Appropriations bill for fiscal year 2012 totals \$30,638,727,000, \$1,043,303,000 below the amount appropriated in fiscal year 2011 and \$5,901,082,000 below the President's budget request.

Title I of the bill provides \$4,768,406,000 for the programs of the U.S. Army Corps of Engineers, \$88,807,000 below fiscal year 2011 and \$195,406,000 above the budget request. The fiscal year 2012 budget request for the Corps of Engineers totals \$4,573,000,000, including \$58,000,000 of rescissions, of which \$35,000,000 is from emergency funding.

Title II provides \$934,000,000 for the Department of the Interior and the Bureau of Reclamation, \$160,525,000 below fiscal year 2011 and \$117,380,000 below the budget request. The Committee recommends \$905,296,000 for the Bureau of Reclamation, \$157,289,000 below fiscal year 2011 and \$113,093,000 below the budget request. The Committee recommends \$28,704,000 for the Central Utah Project, \$3,236,000 below fiscal year 2011 and \$4,287,000 below the budget request.

Title III provides \$24,740,746,000 for the Department of Energy, \$850,430,000 below fiscal year 2011 and \$5,943,056,000 below the budget request. Funding for the National Nuclear Security Administration (NNSA), which includes nuclear weapons activities, defense nuclear nonproliferation, naval reactors, and the Office of the NNSA Administrator, is \$10,599,031,000, \$76,511,000 above fiscal year 2011 and \$1,113,567,000 below the request. This reduction is offset by \$70,332,000 in rescinded prior-year funds, resulting in a total program increase of approximately \$146,843,000 over fiscal year 2011.

The Committee recommends \$4,800,000,000 for the Office of Science, \$1,304,636,000 for renewable energy and energy efficiency programs; \$733,633,000 for nuclear energy programs; and \$476,993,000 for fossil energy research and development.

Environmental management activities—non-defense environmental cleanup, uranium enrichment decontamination and decommissioning, and defense environmental cleanup—are funded at \$5,599,740,000, \$100,532,000 below fiscal year 2011 and \$530,331,000 below the budget request. An additional maximum of \$150,000,000 from proceeds is directed for cleanup activities, resulting in a total program level of \$5,749,740,000.

Funding for the Power Marketing Administrations is provided at the requested levels.

Title IV provides \$266,575,000 for several Independent Agencies, \$19,594,000 above fiscal year 2011 and \$1,052,000 below the budget request. Net funding for the Nuclear Regulatory Commission is \$136,527,000, \$461,000 below fiscal year 2011 and \$9,013,000 above the request. Funding for the Nuclear Regulatory Commission Inspector General is provided in addition to these sums.

Title V provides \$1,028,684,400 of emergency funding for the Corps of Engineers to respond to and to repair damages caused by the flood and storm events of 2011.

Agency/account	Requirement
Department of Energy/Naval Petroleum Reserves.	Long-term management plan for transitioning RMOTC to self-sustaining facility
Department of Energy/Non-Defense Environmental Cleanup.	Plan on cleanup of small sites and remaining liabilities
Department of Energy/Uranium Enrichment D&D Fund.	Directs use of miscellaneous proceeds
Department of Energy/Science	Report on effectiveness of STEM education programs
Department of Energy/Science	Report on exascale computing targets and program plan
Department of Energy/Science	Performance plan and report on Fuels from Sunlight Energy Innovation Hub
Department of Energy/Science	Performance plan on Batteries and Energy Storage Energy Innovation Hub
Department of Energy/Science	Performance plan and status report on Energy Frontier Research Centers
Department of Energy/Science	Performance assessment of multi-year research projects
Department of Energy/Science	Plan for transition of medical applications research to appropriate agency
Department of Energy/Science	Evaluation of BioEnergy Research Centers
Department of Energy/Science	Report on prioritization of magnetic fusion energy research activities
Department of Energy/Science	Assessment of alternatives for deep underground science laboratory
Department of Energy/Science	Ten-year plan for science graduate fellowships
Department of Energy/Nuclear Waste Disposal.	Directs completion of Yucca Mountain license application process
Department of Energy/Nuclear Waste Disposal.	Options for development of interim storage capacity for high-level nuclear waste
Department of Energy/ARPA-Energy	Report on guidelines for project risk profile
Department of Energy/ARPA-Energy	Project progress report and performance interim assessment
Department of Energy/Title 17 Loan Guarantee Program.	Notification requirements for awards
Department of Energy/NNSA	Development of formal guidance to collect financial information from contractors
Department of Energy/NNSA	Plan to increase the domestic supply of helium-3
Department of Energy/Weapons Activities	New reporting requirements for early life extension activities
Department of Energy/Weapons Activities	Directs separate reporting of legacy contractor pension costs
Department of Energy/Weapons Activities	Report on status of the workforce
Department of Energy/Weapons Activities	Report on footprint reduction
Department of Energy/Weapons Activities	Directs report on options to improve the safety of transporting nuclear weapons
Department of Energy/Weapons Activities	Limits funding for B61 Life Extension Program pending new reporting
Department of Energy/Weapons Activities	Plan to ensure the supply of tritium
Department of Energy/Weapons Activities	Report on aircraft capabilities needed to conduct emergency response activities
Department of Energy/Defense Nuclear Nonproliferation.	Evaluation of the effectiveness of radiation portal monitoring
Department of Energy/Defense Nuclear Nonproliferation.	Updated plan for Russian Surplus Materials Disposition
Department of Energy/Naval Reactors	Separate funding for OHIO-replacement research and development
Department of Energy/Naval Reactors	Directs transition to budgeting for research and development by ship platform
Department of Energy/Naval Reactors	Separate funding for infrastructure and operations
Department of Energy/Naval Reactors	Multi-year infrastructure recapitalization plan
Department of Energy/Defense Environmental Cleanup.	National Academies study on potential uses of H-Canyon
Department of Energy/Defense Environmental Cleanup.	Semi-annual report on status of Waste Treatment Plant
Department of Energy/Defense Environmental Cleanup.	Requirement to certify the safety of cleanup program
Department of Energy/Defense Environmental Cleanup.	Evaluation of costs to resolve safety concerns of Waste Treatment Plant
Department of Energy/Defense Environmental Cleanup.	Report on lessons learned from Recovery Act projects
Department of Energy/Defense Environmental Cleanup.	Report on projects funded within operations and maintenance accounts
Department of Energy/Other Defense Activities.	Annual report on independent health, safety and security oversight activities
Nuclear Regulatory Commission	Prohibits funding to close out Yucca Mountain license application
Nuclear Regulatory Commission	Limitations on reprogramming funding
Nuclear Regulatory Commission	Semi-annual report on licensing and regulatory activities
Nuclear Regulatory Commission	Report on pre-application activities of advanced reactors
Tennessee Valley Authority	Inspector General audit and inspection reports

address concerns that its use of this process destabilizes the uranium markets.

For fiscal year 2013, the Department is directed to request any proposed use of miscellaneous proceeds in its budget request.

SCIENCE

Appropriation, 2011	\$4,842,665,000
Budget estimate, 2012	5,416,114,000
Recommended, 2012	4,800,000,000
Comparison:	
Appropriation, 2011	- 42,665,000
Budget estimate, 2012	- 616,114,000

The Office of Science funds basic science research in support of the Department of Energy's core energy-focused missions. Through science research in physics, biology, chemistry, and other fundamental science and technology disciplines, the Department pushes the limits of scientific understanding and helps to maintain the nation's leadership in energy innovation. Through national laboratories, universities, and other partnerships, the Office of Science funds a significant portion of science research nationwide.

Science research includes programs focusing on high energy physics, nuclear physics, biological and environmental research, basic energy sciences, advanced scientific computing, fusion energy sciences, maintenance and construction of science laboratory infrastructure, safeguards and security at the science laboratories, workforce development for teachers and scientists, and science program direction.

The Committee recommendation is \$4,800,000,000, \$42,665,000 below fiscal year 2011 and \$616,114,000 below the budget request. After accounting for a one-time rescission of \$15,000,000 in fiscal year 2011 and the use of \$2,749,000 of prior-year balances in this bill, the recommendation is \$54,916,000 below fiscal year 2011.

Understanding that harnessing scientific and technological ingenuity has long been at the core of the nation's prosperity, the Department has programs designed to increase the number of underrepresented minorities in science, technology, engineering, and mathematics (STEM) areas. The Committee encourages the Department to maintain this commitment by engaging in competitions supporting programs that increase the number of underrepresented college minorities in STEM fields. The Secretary of Energy shall submit a report to the Congress concurrent with the fiscal year 2013 budget request evaluating the effectiveness of this initiative.

Use of prior-year balances.—The Department is directed to use \$2,749,000 of prior-year balances as proposed in the request.

ADVANCED SCIENTIFIC COMPUTING RESEARCH

The Advanced Scientific Computing Research program develops world-leading computing and networking capabilities in support of science and energy research. The Committee recommends \$427,093,000 for Advanced Scientific Computing Research, \$5,096,000 above fiscal year 2011 and \$38,507,000 below the request.

The Office of Science and the National Nuclear Security Administration fund the development and operation of the world's fastest

computing systems. These systems have consistently topped the list of the world's fastest supercomputers. More than just symbolic, American leadership in supercomputing supports domestic world-leading weapons and scientific research while keeping the private sector at the leading edge of information technology. Global competition has become increasingly fierce, with the United States unseated from the top spot in late 2010. The Committee continues to support science activities in the United States that improve and develop the world's fastest supercomputing systems.

Exascale Computing.—Beyond short-term incremental improvements in leadership computing systems, the Department is currently conducting research into the development of an exaflop speed—or “exascale”—computing platform that would run at three orders of magnitude faster than today's fastest computing systems. The pursuit of computing capabilities at these speeds is crucial to maintaining U.S. leadership in the increasingly important field of high performance computing, and in the broader information technology industry. Further, exascale systems will enable new simulations and analyses not currently possible in basic science research, energy technology development and weapons science. As both the Office of Science and the National Nuclear Security Administration have vested interests in exascale computing, the Committee commends efforts to collaborate on exascale research across these two programs and encourages further coordination and collaboration.

While the budget request proposes funding increases to accelerate exascale research and emphasizes its importance, the Department has not yet aggregated exascale research components into a coherent effort. Several Department national laboratories have stated target years for exascale prototypes and fully-operational exascale systems, but the Department has not stated any such timeframes, nor has it provided clear funding amounts for the exascale effort in the budget request. The Department is directed to provide to the Committee, not later than February 10, 2012, a report including its current target date for developing an operational exascale platform, interim milestones towards reaching that target, estimated total ranges of Department investment likely needed to hit those targets, and a complete listing of exascale activities included in the budget request broken out by program and activity with comparisons to the current year's funding levels.

The Committee is supportive of investment in the national laboratories to expedite the exascale initiative, but also recognizes that small technology companies frequently provide the breakthrough innovations that are needed to achieve the kind of low-power, high-speed systems needed for exascale computing, particularly as the leap to exascale may require unconventional technology solutions. For this reason, the Committee encourages the Department not to limit its exascale efforts solely to national laboratories and the largest private sector organizations, but also to consider small companies and research organizations working on the cutting edge of computing technologies.

BASIC ENERGY SCIENCES

Basic Energy Sciences supports research in materials science, chemistry, geoscience and bioscience to provide the foundations for future innovations in energy technologies and national security.

The Committee recommends \$1,688,145,000 for Basic Energy Sciences, \$9,950,000 above fiscal year 2011 and \$296,855,000 below the request.

The recommendation includes \$24,300,000 for the third year of the Fuels from Sunlight Energy Innovation Hub. The Committee is encouraged that this Hub is aggressively partnering with Energy Frontier Research Centers and other Department-funded groups conducting research into catalysts, membranes, and other areas that can contribute to the Hub's mission. The Department is directed to deliver to the Committee, not later than 60 days after enactment of this Act, a report detailing: the current status of the Hub, including number of employees and status of the Hub's final offices and other facilities; all milestones originally set forth for the Hub, including those for the end of fiscal years 2010 and 2011; the Hub's current performance in meeting those milestones; the Hub's milestones for fiscal years 2012, 2013 and 2014; and the specific milestones and performance criteria that the Hub must meet in order to be considered for a second five-year term.

Within available funds, the recommendation includes \$20,000,000 to establish an Energy Innovation Hub for Batteries and Energy Storage. The Department is directed to deliver to the Committee, not later than 90 days after enactment of this Act, a report detailing: a timeline for selecting the awardee; draft organizational and research milestones for the end of fiscal years 2012 through 2016; and specific criteria the Hub must meet to be considered for extension beyond the initial five-year term. The report must also identify how the Hub will work with other Department of Energy programs and activities focusing on batteries and energy storage, including any Energy Frontier Research Centers focusing on related research areas.

From within available funds, the recommendation includes no funds to establish new Energy Frontier Research Centers (EFRCs), the same as the request. The Department first funded the existing EFRCs in fiscal year 2009, establishing 46 centers for initial five-year periods to research five areas of science that would enable energy innovation. The Committee supports the energy-focused missions of the centers, as well as the increased visibility, transparency and accountability they bring to research conducted within Basic Energy Sciences. As with other initiatives established for limited terms, such as the Energy Innovation Hubs and BioEnergy Research Centers, the Department should not assume that all, or even most, Energy Frontier Research Centers will be continued beyond their fifth year in fiscal year 2013. Rather, each EFRC will be required to demonstrate superior performance and results germane to the Department's energy-focused mission in order to receive an extension beyond the initial five-year award. To prepare for that review process and to better inform the Committee on the performance of these centers, the Department is directed to provide to the Committee, not later than March 1, 2012, a report including the five-year research goals for each EFRC, each center's current status towards reaching those goals, and the Department's latest rating of each EFRC's performance as they pass their half-way point and the Committee considers funding for the last year of the initial five-year awards.

The recommendation provides no funds, \$8,520,000 below the request, for the Experimental Program to Stimulate Competitive Research.

The Department proposed in the fiscal year 2011 budget request, and again this year, to move gas hydrates research from the Office of Fossil Energy to the Office of Science. As the proposed activities remain largely unchanged, this activity is more appropriately and effectively located within the Office of Fossil Energy. As such, no funding is included in the recommendation for Basic Energy Sciences for the proposed new gas hydrates activity.

Terminations of Underperforming Projects.—Basic Energy Sciences research often operates at the boundaries of human knowledge in pursuit of solutions to the Department's energy challenges. In this mission-focused pursuit, projects can often fail, either due to deficiencies of the research team or simply due to unexpected obstacles encountered when confronting some of the most difficult scientific problems. When a multi-year project struggles to meet its goals, it is a difficult decision but may be the best use of taxpayer dollars to terminate the project. The Committee is concerned that this effective practice is not often implemented at the Department of Energy.

The Committee is encouraged by one example, the Advanced Research Projects Agency—Energy, which is closely monitoring all projects and actively considering the termination of projects that fail to meet their challenging goals. However, the Committee is concerned that Basic Energy Sciences is not holding its research groups accountable in the same way, and that it is not terminating underperforming grants.

Further, while a portion of Basic Energy Sciences research is awarded to known recipients with defined goals—for example, to Energy Frontier Research Centers and Energy Innovation Hubs—more than 80 percent of the \$854,669,000 of research in the budget request for Basic Energy Sciences lacks transparency to the public and to the Congress. The Committee is concerned that, in light of this lack of transparency, research activities receiving federal funding are not being held accountable to achieve the goals that make Basic Energy Science so critical to American scientific expertise and energy innovation.

While free scientific exploration without use-inspired goals is important to advancing science, innovation, and American intellectual property, research funded under Department of Energy programs is ultimately centered on its core energy-focused goals. Within that context, most 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, including those at universities, national laboratories, Energy Frontier Research Centers, Energy Innovation Hubs and other recipients, by comparing current performance with original project goals. The Department is directed to terminate the lowest-ranking awards within Basic Energy Sciences in the amount of \$25,000,000, and to report to the Committee, not later than March 15, 2012, on the results of the ranking exercise and selected terminations. These terminations will ensure that taxpayer dollars go only to the highest-performing projects, and will serve as a first step towards in-

creasing the accountability and effectiveness of the research in this important program.

BIOLOGICAL AND ENVIRONMENTAL RESEARCH

The Biological and Environmental Research program supports advances in energy technologies and related science through research into complex biological and environmental systems. The Committee recommends \$547,075,000 for Biological and Environmental Research, \$64,748,000 below fiscal year 2011 and \$170,825,000 below the request.

The Committee supports activities that align closely with the Department's core missions and advance the nation's leadership in intellectual property generation and energy innovation. Within Biological and Environmental Research, such mission-focused activities include plant and microbe biology research that can enable breakthrough innovations in energy technologies like next-generation biofuel production, as well as research in support of the Department's ongoing site and facility cleanup responsibilities.

To this end, the Committee supports the Department's efforts to eliminate activities that do not align with core Departmental missions. While Office of Science research focusing on medical applications of an artificial retina has produced important advances, the Department cannot sustain the use of funds for such off-mission purposes. The recommendation includes no funds for this research line, the same as the request, and the Department is directed to report to the Committee, not later than December 15, 2011, on its strategy to transition this research to the National Institutes of Health or other appropriate federal entity.

The Climate and Environmental Sciences program devotes the majority of its funding to areas not directly related to the core mandate of science and technology research leading to energy innovations. Further, climate research at the Department of Energy is closely related to activities carried out in other federal agencies and may be better carried out by those organizations. The Department proposes to eliminate medical research focused on human applications in order to direct limited funds to on-mission purposes, and the Department should apply the same principles to climate and atmospheric research.

The Committee continues to support the goals of the Bioenergy Research Centers (BRCs), which conduct science research aiming to develop the next generation of economic fuels made from domestic plant sources that do not compete with the nation's food supply. Successful breakthroughs at the BRCs could result in technologies that could leapfrog current incarnations of cellulosic biofuels and provide a path to substantially reducing the nation's oil imports. However, these centers were never envisioned as permanent research institutions dependent on federal funding, but instead as temporary and targeted initiatives with five-year terms. In order to receive funding beyond fiscal year 2012, the fifth full year of funding, the Department will need to fully justify to the Committee each center's performance. The Committee therefore directs the Department to provide to the Committee, not later than February 6, 2012, a full evaluation of each Bioenergy Research Center, a comparison of each center's achievements with the Department's origi-

nal targets, and the Department's subsequent recommendation for extension or conclusion of each center.

While the Department has increased collaboration between the Bioenergy Research Centers and its applied research and development programs, the Committee encourages greater integration and cooperation among these activities in order to more effectively advance biofuels solutions from the laboratories to commercial production.

FUSION ENERGY SCIENCES

Fusion Energy Sciences conducts basic science research and experimentation seeking to harness nuclear fusion for energy production purposes. The Committee recommends \$406,000,000 for fusion energy sciences, \$30,537,000 above fiscal year 2011 and \$6,300,000 above the request.

While the National Nuclear Security Administration performs inertial confinement fusion research for nuclear stockpile stewardship, the Office of Science has historically focused on magnetic confinement fusion and other related research. The Committee continues to strongly support magnetic confinement fusion research both as a source of American scientific leadership and expertise, and as a long-term effort to develop a clean energy alternative powered by domestic resources. As a result of the program's sole focus on magnetic fusion energy, however, the Office of Science's program does not have a broad framework for pursuing research avenues related to inertial fusion energy. In anticipation of achieving ignition at the National Ignition Facility—a critical milestone in the demonstration of inertial confinement fusion's feasibility for energy production—the Department has commissioned a National Academies study assessing the prospects for power generation with inertial fusion energy and identifying obstacles and challenges that will assist in developing a research and development roadmap. The Committee supports this study and encourages the Department to move quickly upon completion of the report to determine a proposed path forward for inertial fusion energy in the event ignition is achieved.

Further, the Committee remains concerned that research expertise may be lost while the Department awaits completion of the National Academies study, which is not due until July of 2012. The Committee urges the Department to fully evaluate existing research capabilities that do not fit easily within the existing weapons-focused inertial and energy-focused magnetic confinement fusion programs, such as krypton fluoride lasers and magneto-inertial fusion, but that may play important roles if an inertial fusion energy program moves forward in future years. The Department should take action to avoid irreversible losses in expertise in these areas before completion of the National Academies study.

The budget request proposes \$105,000,000 for ITER, the first full-scale test reactor for fusion energy. The Committee supports this project as an important step in the development of fusion energy and takes seriously the Department's commitments to international collaborations. However, the Department of Energy's required contribution to ITER is expected to increase substantially in the next several years, and the Committee is concerned that, while funding for ITER will yield important advances to domestic superconductor and other manufacturing capabilities, it may leave little

budgetary room to continue supporting critical American fusion science expertise. Further, the Department has not preemptively indicated how it is planning for this impending budgetary challenge, nor has it created a clear prioritization of activities within Fusion Energy Sciences to guide tradeoffs when budgets are tight. The Department is therefore 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.

HIGH ENERGY PHYSICS

The Committee recommends \$797,200,000 for High Energy Physics, \$1,780,000 above fiscal year 2011 and the same as the budget request.

The United States led the world in high-energy particle physics for much of the twentieth century, most recently as the host of Fermilab's Tevatron accelerator, which staged the world's highest-energy particle collisions for several decades. As the Large Hadron Collider (LHC) at CERN ramps up operation as the world's leading experimental site for high-energy collider physics, the Committee supports the Department of Energy's significant ongoing contributions to this international collaboration probing the edges of scientific discovery on the nature of the universe. The Committee also supports the Department's careful prioritization within this program and decision to invest in the so-called "intensity frontier" of high-energy physics—an area of science in which the United States can become a global leader. In a time marked by the need for fiscal restraint, the Department will be pressed to further prioritize between these two competing directions within High Energy Physics.

The Deep Underground Science and Engineering Laboratory (DUSEL) has been an important component of the Department's planning for the build-out of its neutrino and dark matter experimental capabilities. The decision by the National Science Foundation to discontinue funding for the underground laboratory has created additional uncertainty for program planning and delayed the Critical Decision 1 milestone for the Long Baseline Neutrino Experiment. As the Department weighs alternatives, the Committee cautions the Department against taking over the construction and long-term management of DUSEL. Adopting management of yet another laboratory site would add budgetary and management burdens to an already stressed program. However, the Committee supports the use of funding to maintain the viability of the DUSEL underground laboratory, including dewatering and maintaining security, in order to preserve it as an option while the Department weighs the alternatives. Further, the Department is directed to re-

port to the Committee an assessment of alternatives to DUSEL and its recommendations for moving forward.

NUCLEAR PHYSICS

The Committee recommends \$552,000,000 for Nuclear Physics, \$11,886,000 above fiscal year 2011 and \$53,300,000 below the request. The recommendation includes \$24,000,000 for the Facility for Rare Isotope Beams, \$6,000,000 below the budget request.

The Committee notes that the Nuclear Physics program has unique experimental capabilities for testing materials under irradiative environments. Materials stressed by intense radiation are important to many technologies, including nuclear fission and nuclear fusion. After the completion of the fusion energy experiment ITER, for example, the most significant technical obstacle to construction of a fully-operational demonstration fusion reactor is the development of containment materials that can withstand a sustained high flux of neutrons without significant degradation. The Committee encourages the Department to consider ways to strengthen productive cooperation between Nuclear Physics and other programs at the Department of Energy to better understand and develop materials that can withstand high levels of radiation.

WORKFORCE DEVELOPMENT FOR TEACHERS AND SCIENTISTS

The Committee recommends \$17,849,000 for workforce development for teachers and scientists, \$4,751,000 below fiscal year 2011 and \$17,751,000 below the request.

Within the funds provided, up to \$5,000,000 is for the graduate fellowship program to fund the existing cohort established in fiscal year 2010. The Department is directed to report to the Committee, not later than 90 days after enactment of this Act, a 10-year plan outlining the long-term objectives for this program, the number of simultaneous fellowships the Department plans to ultimately support under a flat-budget scenario for the Office of Science, and the funding needs under that plan. The plan shall also justify to the Committee why fellowships should be funded within the Office of Science when other agencies, in particular the National Science Foundation, are the primary federal entities for such purposes.

SCIENCE LABORATORIES INFRASTRUCTURE

The Committee recommends \$103,487,000 for Science Laboratories Infrastructure, \$22,260,000 below fiscal year 2011 and \$8,313,000 below the budget request.

The Department is directed to consider payments to school districts nationwide that are eligible for Payments in Lieu of Taxes where the Department has not met its reimbursement obligations.

SAFEGUARDS AND SECURITY

The Committee recommends \$83,900,000, \$114,000 above fiscal year 2011 and the same as the budget request, to meet safeguards and security requirements at Office of Science facilities.

SCIENCE PROGRAM DIRECTION

The Committee recommends \$180,000,000 for Science Program Direction, \$22,520,000 below fiscal year 2011 and \$36,863,000 below the request.

NUCLEAR WASTE DISPOSAL

Appropriation, 2011	-\$2,800,000
Budget estimate, 2012	—
Recommended, 2012	25,000,000
Comparison:	
Appropriation, 2011	+27,800,000
Budget estimate, 2012	+25,000,000

The Committee recommendation includes \$25,000,000, \$27,800,000 more than fiscal year 2011 and \$25,000,000 more than the request, to continue the Department of Energy's congressionally-mandated activities to continue the Yucca Mountain license application activity.

As discussed elsewhere in this report, the Administration's attempts to shut down this activity are without scientific merit and are contrary to existing law and congressional direction. The Committee has included this funding to provide necessary expenses in the event that ongoing litigation requires the Administration to reconstitute its license application team.

The Committee supports the good analytical work that the Blue Ribbon Commission on American's Nuclear Future could contribute to the national dialogue surrounding nuclear power. While the Committee understands that the Commission is not a "siting commission," the Commission does have an obligation to include in its analysis information gathered from decades of work on Yucca Mountain, and should be able to show how and why any of its proposed alternatives are better than the existing options. The Committee directs the Blue Ribbon Commission, as it has in the past, to include Yucca Mountain among the alternatives it is considering for the future of nuclear waste disposition in the United States.

While disposition at Yucca Mountain and additional geological repositories must be part of this nation's spent fuel disposition plan, this Administration's political maneuvering has further delayed the opening of any such repository. In the meantime, this delay is increasing the liability of the U.S. government caused by its failure to fulfill the responsibilities laid out in the Nuclear Waste Policy Act of 1982, liabilities which must eventually be paid by the taxpayer. As discussed above, these liabilities may be as much as \$16.2 billion by 2020 and \$500 million more each year after.

This Committee has long held the view that the federal government could demonstrate its capability to meet its contractual obligation under the Nuclear Waste Policy Act by addressing the spent fuel and other high-level nuclear waste at permanently shut-down reactors. Moreover, the Department of Energy, in a December 2008 report prepared at the direction of the Committee, indicated that the interim storage of this material "would provide the Department an option in addition to Yucca Mountain to allow the Department to begin to meet its contractual obligations with the owners of commercial spent nuclear fuel. This option could prove beneficial should Yucca Mountain experience delays due to licensing, litiga-

COMPARATIVE STATEMENT OF NEW BUDGET (OBLIGATIONAL) AUTHORITY FOR 2011
AND BUDGET REQUESTS AND AMOUNTS RECOMMENDED IN THE BILL FOR 2012
(Amounts in thousands)

	FY 2011 Enacted	FY 2012 Request	Bill	Bill vs. Enacted	Bill vs. Request
URANIUM ENRICHMENT DECONTAMINATION AND DECOMMISSIONING FUND					
Oak Ridge.....	---	182,747	182,747	+182,747	---
Paducah.....	---	77,780	77,780	+77,780	---
Portsmouth.....	---	243,642	188,473	+188,473	-55,169
Undistributed funds.....	506,984	---	---	-506,984	---
Rescission.....	-9,900	---	---	+9,900	---
TOTAL, UED&D FUND/URANIUM INVENTORY CLEANUP.....	497,084	504,169	449,000	-48,084	-55,169
SCIENCE					
Advanced scientific computing research.....	421,997	465,600	427,093	+5,096	-38,507
Basic energy sciences: Research.....	1,526,898	1,833,600	1,547,343	+20,445	-286,257
Construction: 07-SC-06 Project engineering and design (PED) National Synchrotron light source II (MSLS-II)	151,297	151,400	140,802	-10,495	-10,598
Subtotal, Basic energy sciences.....	1,678,195	1,985,000	1,688,145	+9,950	-296,855

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	FY 2011 Enacted	FY 2012 Request	Bill	Bill vs. Enacted	Bill vs. Request
Biological and environmental research:					
Biological systems science.....	316,744	376,262	---	-316,744	-376,262
Climate and environmental sciences.....	295,079	341,638	---	-295,079	-341,638
Research.....	---	---	547,075	+547,075	+547,075
Subtotal, Biological and environmental research.....	611,823	717,900	547,075	-64,748	-170,825
Fusion energy sciences program.....	375,463	399,700	406,000	+30,537	+6,300
High energy physics:					
Research.....	795,420	756,200	759,070	-36,350	+2,870
Construction:					
11-SC-40 Project engineering and design (PED)		17,000	15,810	+15,810	-1,190
Long baseline neutrino experiment, FNAL.....	---	---	---	---	---
11-SC-41 Project engineering and design (PED)		24,000	22,320	+22,320	-1,680
muon to electron conversion experiment, FNAL.....	---	---	---	---	---
Subtotal.....	---	41,000	38,130	+38,130	-2,870
Subtotal, High energy physics.....	795,420	797,200	797,200	+1,780	---
Nuclear physics:					
Operations and maintenance.....	504,186	539,300	512,000	+7,814	-27,300
Construction:					
06-SC-01 Project engineering and design (PED)					
12 GeV continuous electron beam accelerator					
facility upgrade, Thomas Jefferson National					

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	FY 2011 Enacted	FY 2012 Request	Bill	Bill vs. Enacted	Bill vs. Request
Accelerator facility (was project 07-SC-001), Newport News, VA.....	35,928	66,000	40,000	+4,072	-26,000
Subtotal, Nuclear physics.....	540,114	605,300	552,000	+11,886	-53,300
Workforce development for teachers and scientists.....	22,600	35,600	17,849	-4,751	-17,751
Science laboratories infrastructure:					
Infrastructure support:					
Payment in lieu of taxes.....	1,382	1,385	1,385	+3	---
Oak Ridge landlord.....	5,249	5,493	5,493	+244	---
Subtotal.....	6,631	6,878	6,878	+247	---
Construction:					
11-SC-70 Utilities upgrade, FNAL.....	---	---	---	---	---
11-SC-71 Utility infrastructure modernization at TJNAF.....	---	---	---	---	---
12-SC-70 Science and user support building, SLAC.	---	12,086	10,273	+10,273	-1,813
10-SC-70 Research support building and infrastructure modernization, SLAC.....	40,694	12,024	11,182	-29,512	-842
10-SC-71 Energy sciences building, ANL.....	14,970	40,000	37,200	+22,230	-2,800
10-SC-72 Renovate science laboratory, Phase II, BNL.....	14,970	15,500	14,415	-555	-1,085
09-SC-72 Seismic life-safety, modernization and replacement of general purpose buildings Phase 2, PED/Construction, LBNL.....	20,063	12,975	12,066	-7,997	-909
09-SC-73, Interdisciplinary science building Phase 1, PED, BNL.....	---	---	---	---	---

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AND BUDGET REQUESTS AND AMOUNTS RECOMMENDED IN THE BILL FOR 2012
(Amounts in thousands)

	FY 2011 Enacted	FY 2012 Request	Bill	Bill vs. Enacted	Bill vs. Request
09-SC-74, Technology and engineering development facilities PED, TJNAF.....	28,419	12,337	11,473	-16,946	-864
Subtotal.....	119,116	104,922	96,609	-22,507	-8,313
Subtotal, Science laboratories infrastructure...	125,747	111,800	103,487	-22,260	-8,313
Safeguards and security.....	83,786	83,900	83,900	+114	---
Science program direction:					
Science program direction.....	202,520	216,863	---	-202,520	-216,863
Headquarters.....	---	---	78,028	+78,028	+78,028
Office of Science and Technical Information.....	---	---	7,700	+7,700	+7,700
Field offices.....	---	---	94,272	+94,272	+94,272
Subtotal, Science program direction.....	202,520	216,863	180,000	-22,520	-36,863
Subtotal, Science.....	4,857,665	5,418,863	4,802,749	-54,916	-616,114
Rescission.....	-15,000	---	---	+15,000	---
Congressionally directed projects.....	---	---	---	---	---
Use of prior year balances.....	---	-2,749	-2,749	-2,749	---
TOTAL, SCIENCE.....	4,842,665	5,416,114	4,800,000	-42,665	-616,114

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	FY 2011 Enacted	FY 2012 Request	Bill	Bill vs. Enacted	Bill vs. Request
Non-defense environmental clean up.....	224,350	219,121	213,121	-11,229	-6,000
Rescission.....	-900	---	---	+900	---
Subtotal.....	223,450	219,121	213,121	-10,329	-6,000
Uranium enrichment decontamination and decommissioning fund.....	506,984	504,169	449,000	-57,984	-55,169
Rescission.....	-9,900	---	---	+9,900	---
Subtotal.....	497,084	504,169	449,000	-48,084	-55,169
Science.....	4,857,665	5,416,114	4,800,000	-57,665	-616,114
Rescission.....	-15,000	---	---	+15,000	---
Subtotal.....	4,842,665	5,416,114	4,800,000	-42,665	-616,114
Nuclear Waste Disposal.....	---	---	25,000	+25,000	+25,000
Rescission.....	-2,800	---	---	+2,800	---
Subtotal.....	-2,800	---	25,000	+27,800	+25,000
Advanced Research Projects Agency-Energy.....	179,640	550,011	100,000	-79,640	-450,011
Innovative Technology Loan Guarantee Program.....	58,000	38,000	38,000	-20,000	---
Offsetting collection.....	-58,000	-38,000	-38,000	+20,000	---
Loan volume rescission.....	-181,830	---	---	+181,830	---
Additional loan volume.....	11,830	360,000	---	-11,830	-360,000