

Support Services [CBOSS] program to maximize and fully meet the multiple mission requirements and support the Department’s critical cybersecurity mission. Funding shall continue to be used to accelerate the deployment of continuous diagnostic and mitigation [CDM] and the CIO’s effort to implement CDM capabilities across the entire Department, including the national laboratories. Funding resources shall continue to be prioritized to ensure that the CIO continues to work closely with the Office of Electricity and CESER to ensure coordinated protection of the Power Marketing Administrations and unified support for cybersecurity of the energy sector as well as initiatives for information technology and data center optimization, movement to the cloud and enhancing the stewardship of information technology spending including progress in implementing technology business management, incorporating new controls on information technology spend capture in financial systems in cooperation with the Office of the Chief Financial Officer, and expanding the use of category management and best in class contract vehicles.

OFFICE OF THE INSPECTOR GENERAL

Appropriations, 2019	\$51,330,000
Budget estimate, 2020	54,215,000
Committee recommendation	54,215,000

The Committee recommends \$54,215,000 for the Office of the Inspector General, the same as the request.

ATOMIC ENERGY DEFENSE ACTIVITIES

NATIONAL NUCLEAR SECURITY ADMINISTRATION

The Committee recommendation for the National Nuclear Security Administration [NNSA] continues funding for recapitalization of our nuclear weapons infrastructure, while modernizing and maintaining a safe, secure, and credible nuclear deterrent without the need for underground testing. This is among our most important national security priorities.

At the same time, the Committee supports continuing important efforts to secure and permanently eliminate remaining stockpiles of nuclear and radiological materials overseas and in the United States that could be used for nuclear or radiological weapons. In addition, the Committee supports Naval Reactors and the important role they play in enabling the Navy’s nuclear fleet.

The NNSA is a semi-autonomous agency within the Department. The NNSA Act clearly lays out the functions of the NNSA, and gives the Administrator authority over, and responsibility for, those functions. Again this year, no funds shall be used to reorganize, reclassify, or study combining any of those functions with the Department.

A highly-skilled and diverse workforce is required to maintain and modernize the nuclear weapons stockpile and execute the global nonproliferation initiatives of the NNSA. The Committee commends the NNSA for its aggressive efforts to recruit and retain this unique workforce.

INTEGRATED UNIVERSITY PROGRAM

The Committee directs the Secretary to carry out the requirements of the Integrated University Program in support of university research and development in areas relevant to the NNSA's mission. Within available funds, the Committee recommends not less than \$5,000,000 for the Integrated University Program to cultivate the next generation of leaders in nonproliferation, nuclear security, and international security. Together with funds from the Office of Nuclear Energy and the Nuclear Regulatory Commission, this program ensures highly qualified nuclear specialists will be available to meet national needs. The Committee directs the Department to request funding for this program in future budget years. Funding for this program shall not come from prior year funds.

In addition to the Integrated University Program within Defense Nuclear Nonproliferation, the NNSA manages several university-related programs, ranging from fellowships and scholarships to university research. The NNSA is directed to provide a report annually with the budget request that lists all of the university programs requested, the recommended funding level, and the value that program provides the NNSA.

PROJECT MANAGEMENT

The Committee is concerned about the NNSA's ability to properly estimate costs and timelines for large projects. The NNSA is encouraged to assess current performance on projects costing more than \$750,000,000, and make appropriate project management changes. The Committee encourages the NNSA to identify problems in cost and schedule estimates early, and provide updated information to the Committees on Appropriations of both Houses of Congress in a timely manner.

WEAPONS ACTIVITIES

Appropriations, 2019	\$11,100,000,000
Budget estimate, 2020	12,408,603,000
Committee recommendation	12,742,000,000

The Committee recommends \$12,742,000,000 for Weapons Activities, an increase of \$333,397,000 above the budget request, to ensure the safety, security, reliability, and effectiveness of the Nation's nuclear weapons stockpile without the need for nuclear testing.

DIRECTED STOCKPILE WORK

The Committee recommends \$5,462,417,000 for Directed Stockpile Work.

Life Extension Programs.—The Committee recommends \$2,117,359,000 for Life Extension Programs [LEPs] and Major Alterations, which fully funds all LEPs and major alterations in the budget request, consistent with the plan of record approved by the Nuclear Weapons Council. The NNSA, the Weapons Laboratories, and the Production Sites need to ensure any technical challenges or production issues, particularly in the electronic components, are discovered quickly and mitigated to minimize impacts to com-

pleting LEPs on time and on budget, and to prevent impact on other high priorities, such as modernizing aging infrastructure, and funding for critical programs in support of nonproliferation, nuclear terrorism, and naval reactors.

The Committee is concerned that a recent technical challenge demonstrates a lack of systems engineering and highlights a lack of coordination and leadership focus, which in turn jeopardizes successful program execution. The NNSA is directed to establish an investigative team that shall include members with broad experience in similar technical reviews and shall also include members outside of Defense Programs to examine the issue and make recommendations to the Administrator to: (1) improve causal analysis within the Weapons Program; (2) identify the root cause(s) of this issue; (3) ensure the extent of condition is not more widespread than currently reported; and (4) identify corrective actions to prevent re-occurrence. Within 90 days of enactment of this act, the team shall complete the examination and provide a written report of its findings and recommendations to the Committees on Appropriations of both Houses of Congress.

Weapons Dismantlement and Disposition.—The Committee recommends \$56,000,000 for the dismantlement of retired nuclear weapons removed from the stockpile.

Strategic Materials.—The Committee supports continued investment in strategic materials, including management of existing material stockpiles and methods to replenish the supply needed for our national security programs. As the Department progresses through the ongoing warhead life extension programs, it will require the necessary strategic materials to meet the stockpile demands. The Committee has encouraged NNSA to explore all options to ensure it can maintain a consistent supply of purified uranium metal and other strategic materials. The Committee is concerned that NNSA's current plan does not consider all options, and may not be the most efficient. NNSA is directed to complete an independent technical review of all options prior to commencing any work to convert uranium oxide to metal.

The Committee continues to support the Nuclear Weapons Council's program of record for plutonium pit production, and directs the NNSA to provide a clear breakout of costs for each work activity in future budget requests.

Domestic Uranium Enrichment.—The Committee recommends \$70,000,000 for Domestic Uranium Enrichment. A new control point has been created for downblending high-enriched uranium, so no funds are recommended for downblending within this control point.

RESEARCH, DEVELOPMENT, TECHNOLOGY, AND ENGINEERING

The Committee recommends \$2,442,415,000 for Research, Development, Technology, and Engineering.

Engineering.—The Committee supports investment in Surety Science in recognition of new threats and the challenges maintaining readiness on aging systems. Within the amount recommended, \$5,000,000 is for next-generation technology development for warhead system certification and the protection against theft, loss and terrorism incidents.

Enhanced Capabilities for Subcritical Experiments.—The Committee recommends \$125,160,000 for Enhanced Capabilities for Subcritical Experiments [ECSE], a reduction of \$20,000,000 below the request. While the Committee recognizes the importance of this project, there is not a clear, consistent set of requirements or a plan to meet those requirements. Furthermore, the Committee directs NNSA to identify and execute opportunities to further the proliferation detection research and development agenda as part of the project. The Committee directs NNSA to brief the Committees on Appropriations of both Houses of Congress not later than 60 days after enactment of this Act on the ways the Weapons and Nonproliferation programs intend to collaborate in this area.

Academic Alliances and Partnerships.—The Committee recognizes the importance of the Academic Alliances and Partnerships program in supporting fundamental science and technology research at universities that support stockpile stewardship, the development of the next generation of highly-trained workforce, and the maintenance of a strong network of independent technical peers. The Committee is also aware of the expertise provided to the NNSA by academic alliances and the centers of excellence program. The Committee encourages the NNSA to fund new centers of excellence, especially in the field of materials under extreme conditions research. The Committee recommends \$70,000,000. Within this amount, not less than \$5,000,000 is recommended for Tribal Colleges and Universities and not less than \$20,000,000 is separately recommended for the Minority Serving Institution Partnership Program. Within the Tribal Colleges and Universities program, the Committee directs NNSA to continue existing advanced manufacturing partnerships and expand the program to other institutions.

Inertial Confinement Fusion Ignition and High-Yield.—The Committee finds that the Inertial Confinement Fusion and High Yield [ICF] program continues to be a critical and essential component of nuclear stockpile certification without underground nuclear weapons testing, maintaining U.S. leadership in high energy density physics and laser technologies, and developing the next-generation workforce. Therefore, the Committee recommends \$570,000,000 for the ICF program. The recommendation includes not less than \$344,000,000 for the National Ignition Facility, not less than \$63,100,000 for the Z Facility, not less than \$6,000,000 for the NIKE Laser at the Naval Research Laboratory, and not less than \$80,000,000 for the OMEGA laser facility.

The Committee encourages continued research in High Energy Density Plasmas and recognizes the partnerships between the laboratories and research universities to address the critical need for skilled graduates to replace an aging workforce at our NNSA laboratories. Within available funds, the Committee recommends up to \$5,000,000 for the Joint Program in High Energy Density Laboratory Plasmas.

The Committee directs NNSA's Deputy Administrator for Defense Programs to charge the JASON Defense Advisory Panel to conduct an independent review of the Inertial Confinement Fusion program. The JASON Defense Advisory Panel should be responsible for assessing the value and effectiveness of the inertial confinement fusion program in maintaining a safe, secure, and effective

tive nuclear stockpile and recruiting a highly skilled and talented workforce to national security missions, including a pipeline to the NNSA national laboratories, and offer recommendations on how to further strengthen the program over the next ten years. The JASON Defense Advisory Panel should also independently evaluate the technical progress of all three approaches to ignition, recommend and prioritize future research and infrastructure priorities to make further progress in achieving ignition, and assess the status of international competition and the United States' ability to avoid technological surprise. These assessments should be completed and provided to the Committees on Appropriations of both Houses of Congress by September 30, 2020, and an unclassified summary should be made available.

The Committee recognizes that a predictable and sustained flow of targets is essential to operation of NNSA's large laser facilities. A robust vendor base promotes innovation and ensures defense-in-depth. Furthermore, the national laboratories are the target fabrication centers of last resort, even while they maintain expertise to make them knowledgeable buyers. Therefore, within available funds for facility operations and other amounts, the Committee recommends not less than \$30,000,000 for target research, development, and production. Further, NNSA is directed to provide a justification for all target fabrication conducted by its national laboratories.

The Committee is concerned that near peer adversaries are developing a capability to eclipse the scientific leadership of the United States with regard to pulsed power experiments and technology. The Administrator, within 45 days of enactment of this act shall submit a report to the Committees on Appropriations of both the House and the Senate, with appropriate classified annexes, describing the NNSA's plans to meet or exceed proposed near peer technological developments with regard to pulsed power facilities and technologies. The administration shall include a preliminary budget to build or modify existing facilities to address shortfalls and prevent a technological surprise.

Advanced Simulation and Computing.—The Committee recommends \$839,849,000 for advanced simulation and computing. Within available funds, the Committee recommends not less than \$309,303,000 for activities associated with the exascale initiative, such as advanced system architecture design contracts with vendors and advanced weapons code development to effectively use new high performance computing platforms. Within funds provided, the Committee recommends up to \$48,000,000 for artificial intelligence to support NNSA work.

Advancements in artificial intelligence and machine learning have presented numerous opportunities for advancements in multiple fields. The stockpile stewardship program may benefit from the implementation of either tool and the committee supports the efforts to develop data driven tools such as artificial intelligence and machine learning to identify issues within the stockpile and to better understand how the stockpile is aging. Furthermore, the committee is cognizant of the multiple uses for AI and machine learning and support the implementation of the technologies into other NNSA supported programs, including for the development of

hypersonic technologies, space based equities, additive manufacturing, cyber protection, and basic science and engineering in support of the national security mission. Within 180 days the Administrator shall submit a plan to the Committees on Appropriations of both Houses of Congress on how the NNSA plans to utilize artificial intelligence and machine learning over the next five years throughout the NNSA complex, and the preliminary budget requirements to implement this plan. Furthermore, the Administrator shall provide an analysis of how small businesses can compete for contracts to support these efforts.

Advanced Manufacturing Development.—The Committee recommends \$144,000,000 for Advanced Manufacturing Development. Within available funds, \$70,000,000 is recommended for Process Technology Development, including \$10,000,000 to modernize and upgrade legacy applications at weapons production facilities to improve manufacturing and safety.

INFRASTRUCTURE AND OPERATIONS

The Committee recommends \$3,319,444,000 for Infrastructure and Operations.

Project 06-D-141, Uranium Processing Facility, Y-12, Oak Ridge, Tennessee.—The Committee recommends \$745,000,000 to continue construction activities of the five remaining subprojects of the Uranium Processing Facility, including the Main Process Building and the Salvage and Accountability Building.

The Committee supports the ongoing effort to replace existing enriched uranium capabilities currently residing in Building 9212 by 2025 for not more than \$6,500,000,000 and the strategy of breaking the project into more manageable subprojects. This practice is specifically permitted by DOE Order 413.3B, and is a practical approach for any project of this magnitude.

Maintenance and Repair of Facilities.—Within the amounts provided, the Committee recommends not less than \$60,000,000 for infrastructure at the Nevada National Security Site.

Construction of Non-Nuclear Facilities.—The Committee is concerned that NNSA is not adequately tailoring its requirements to small, non-nuclear facilities, such as parking lots, fire stations, office buildings, and emergency control centers. As a result, these facilities are taking longer and costing more, to build.

DEFENSE NUCLEAR SECURITY

The Committee recommends \$800,000,000 for Defense Nuclear Security.

Project 17-D-710, West End Protected Area Reduction, Y-12.—The Committee recommends \$35,000,000 to complete the West End Protected Area Reduction. The Committee notes that the budget request states that contract acquisition will begin in fiscal year 2020, and encourages NNSA to complete CD-2 and proceed to construction without delay.

DEFENSE NUCLEAR NONPROLIFERATION

Appropriations, 2019	\$1,930,000,000
Budget estimate, 2020	1,993,302,000
Committee recommendation	2,085,000,000

The Committee recommends \$2,085,000,000 for Defense Nuclear Nonproliferation, an increase of \$91,698,000 above the budget request.

Defense Nuclear Nonproliferation provides a vitally important component of our national security, preventing nuclear materials and weapons from falling into the wrong hands, including non-weapons nations, terrorist organizations, and other non-state entities. This mission is challenged by an increasingly dangerous world with emerging and evolving threats, in addition to the proliferation of technologies that simplify production, manufacturing, and design of nuclear materials and weapons. The Committee recognizes the importance of bilateral and multilateral agreements and organizations in detecting, intercepting, and deterring nuclear and radiological threats. The Committee urges the full use of these partnerships to further strengthen U.S. and global security.

Domestic Radiological Security.—The Committee recommends \$137,433,000 for Domestic Radiological Security, including not less than \$35,000,000 for the Cesium Irradiator Replacement Program. Within this amount \$10,000,000 is to address recovery and decontamination efforts associated the container breach and release of material in Seattle, Washington, on May 2, 2019, and up to \$18,000,000 to partner with interested State or local governments to improve capabilities to train first-responders, and other experts in nuclear operations, safeguards, cyber, and emergency operations.

The Committee is aware of issues related to non-radioisotopic alternative technologies to those that use Category 1 and 2 radioactive material, including the technology readiness of alternatives for medical and industrial applications, and the Federal Government's role in promoting alternative technologies. Therefore, the Committee directs the Comptroller General to examine the following questions: (1) What high-risk radioactive isotopes used for medical and industrial applications have potential non-radioisotopic alternatives and what is known about the readiness of the alternative technology? (2) What barriers exist to greater use of non-radioisotopic alternatives and what can be done to reduce or eliminate these barriers? For example, to what extent do private companies bear the cost of disposing of radioactive material, and how do these costs affect adoption of non-radioisotopic alternative technologies? (3) What is the current status of Federal activities relating to alternative non-radioisotopic technologies, including NNSA's program for replacing radioactive materials, NRC's potential role in the adoption of alternative technologies, and the status of other agencies efforts implementing recommendations from the Interagency Working Group on Alternatives to High-Activity Radioactive Sources? This report should be submitted to the Committees on Appropriations of both Houses of Congress not later than two years after the enactment of this act.

Materials Management and Minimization.—The Committee recommends \$10,000,000 for Laboratory and Partnership Support to facilitate interactions between the national laboratories, production facilities and private companies seeking to produce Molybdenum-99 without the use of high-enriched uranium.

The Committee recognizes that in order to meet the nonproliferation goals set forth in AMIPA, it is necessary that the domestic pri-

vate sector has delivered to market a rate of production that has displaced imported Molybdenum-99 and eliminated domestic shortages as defined by the Department of Energy's Cooperative Agreement grant program. Further, the Committee encourages the Department of Energy to budget future Cooperative Agreement grant dollars to recipients capable of meeting this goal by the end of Fiscal Year 2022.

Defense Nuclear Nonproliferation Research and Development.—The Committee recommends \$524,749,000 for Defense Nuclear Nonproliferation Research and Development. The Committee supports a robust research and development capability to support nonproliferation initiatives. Within available funds for Proliferation Detection, the Committee encourages collaboration on the Enhanced Capabilities for Subcritical Experiments project to deploy capabilities that yield additional insights in this area.

Proliferation of illicit nuclear materials and weapons continues to be a high-consequence threat, and our ability to detect the production and movement of these materials is vitally important. Research and development in this area is especially important. The Committee recommends not less than \$22,500,000 for the Nonproliferation Stewardship Program and supports the strategic review for how the program can address gaps in the proliferation detection architecture, as well as testbed development in 2020. The Committee recommendation supports continued research and development of novel enrichment technologies to support nonproliferation goals, and recommends \$7,500,000 for this purpose. The Committee also supports exploration and development of material disposal technologies, and recommends up to \$10,000,000 for this purpose.

Low Enriched Uranium for Naval Applications.—Within available funds for Defense Nuclear Nonproliferation Research and Development, the Committee recommends \$15,000,000 for Advanced Low Enriched Uranium Fuel Research and Development for the national laboratories to develop low-enriched fuels that could replace highly enriched uranium for naval applications. Consistent with section 7319 of title 10, United States Code, this funding is recommended within the Defense Nuclear Nonproliferation account. This work shall be managed within Defense Nuclear Nonproliferation.

Nuclear Counterterrorism and Incident Response.—Within 30 days after enactment of this Act, NNSA shall brief the Committees on Appropriations of both Houses of Congress on the current status, cost, scope, and schedule of the Capability Forward Initiative.

NAVAL REACTORS

Appropriations, 2019	\$1,788,618,000
Budget estimate, 2020	1,648,396,000
Committee recommendation	1,648,396,000

The Committee recommends \$1,648,396,000 for Naval Reactors, the same as the budget request. The Committee's recommendation fully funds important national priorities, including the *Columbia*-class replacement submarine design and the prototype refueling. Naval Reactors currently relies on high-enriched uranium from weapons that have been removed from the stockpile to fuel the

Navy’s aircraft carriers and submarines. The Committee encourages Naval Reactors to continue working with the NNSA to ensure there is a long-term plan that meets the Navy’s needs for high-enriched uranium.

Naval Reactors has an exceptional program for self-assessment and causal analysis. The Committee directs Naval Reactors to assist the Weapons Program to evaluate a recent technical problem to determine the root causes and to identify corrective actions.

COLUMBIA-CLASS REACTOR SYSTEMS DEVELOPMENT

The Committee recommends \$75,500,000 for *Columbia*-Class Reactor Systems Development. *Columbia*-class submarines are vital to maintain our survivable deterrent. The Committee remains concerned about on-time delivery of the first *Columbia*-Class submarine, in part because Naval Reactors claims to have the same amount of schedule margin despite multiple challenges in the propulsion plant. The Committee directs Naval Reactors to provide quarterly updates to the Committees on Appropriations for both Houses of Congress on the progress of the propulsion plant.

NAVAL REACTORS DEVELOPMENT

The Committee recommends \$516,205,000 for Naval Reactors Development. Within the available funds, the Committee recommends \$85,480,000 for the Advanced Test Reactor. The Committee directs Naval Reactors to provide a report on its projected test needs in the Advanced Test Reactor for the next 15 years to the Committees on Appropriations of both Houses of Congress within 90 days after enactment of this act.

S8G PROTOTYPE REFUELING

The Committee recommends \$170,000,000 for S8G Prototype Refueling, an increase of \$15,000,000 above the budget request. The Committee recognizes the importance of on-time completion of the prototype refueling, and places higher priority on this project than research and development for future reactor designs.

CONSTRUCTION

The Committee recommends \$282,600,000 for Construction. Within available funds, the Committee recommends \$238,000,000 for the Spent Fuel Handling Facility in Idaho.

FEDERAL SALARIES AND EXPENSES

Appropriations, 2019	\$410,000,000
Budget estimate, 2020	434,699,000
Committee recommendation	434,699,000

The Committee recommends \$434,699,000 for Federal Salaries and Expenses, the same as the budget request. The Committee recognizes the importance of recruiting and retaining the highly-skilled personnel needed to meet NNSA’s important mission. Chronic underfunding in this account has led to understaffing across multiple areas, even as overall NNSA workload has increased. In order to remedy the situation, NNSA needs to hire an adequate number of personnel with the right skills mix. The Com-

mittee directs NNSA to brief the Committees on Appropriations of both Houses of Congress quarterly on the status of hiring and retention, how it is utilizing its special hiring authority, and actions it is taking to streamline hiring of Federal employees.

DEFENSE ENVIRONMENTAL CLEANUP

Appropriations, 2019	\$6,024,000,000
Budget estimate, 2020	5,506,501,000
Committee recommendation	6,226,000,000

The Committee recommendation for Defense Environmental Cleanup is \$6,226,000,000, an increase of \$719,499,000 above the budget request. Within available funds, the Department is directed to fund the hazardous waste worker training program at \$10,000,000.

Future Budget Requests.—The Committee directs the Department to include out-year funding projections in the annual budget request for Environmental Management, and an estimate of the total cost and time to complete each site.

Richland.—As a signatory to the Tri-Party Agreement, the Department of Energy is required to meet specific compliance milestones toward the cleanup of the Hanford site. Among other things, the Department committed to provide the funding necessary to enable full compliance with its cleanup milestones. Unfortunately, if the Department’s fiscal year 2020 budget request were enacted, future fiscal year Tri-Party Agreement milestones could be at risk, threatening high-risk cleanup projects near the City of Richland, Washington and the economically and environmentally important Columbia River. The Committee recognizes that significant progress has been made at the Hanford Site. However, because the Department’s budget request could slow or halt critical cleanup work and threaten the Department’s compliance with its legal obligations under the Tri-Party Agreement, the Committee recommends \$900,223,000 for Richland Operations. Additional funding is provided for cleanup of the 300–296 waste site under the 324 Building, risk reduction activities associated with legacy waste sites, site-wide infrastructure, and community and regulatory support. Within available funds for Central Plateau Remediation, the Committee redirects \$11,800,000 in prior year funds from the Containerized Sludge Removal (Project 15–D-401) to replace and upgrade power supply infrastructure in support of direct feed low-activity waste operations.

Within available funds, the Department recommends not less than \$8,5000,000 for the Hazardous Materials Management and Emergency Response facilities. Further, within available funds, the Department is directed to carry out maintenance and public safety efforts at the Manhattan Project National Historical Park, including the B Reactor, including facility improvements needed to expand public access and interpretive programs. Within available funds the Department is directed to support the Hanford Workforce Engagement Center to provide education and advocacy to current and former Hanford employees on all available Federal and State compensation programs. None of the Richland Operations funds shall be used to directly carry out waste removal or treatment activities within the Office of River Protection’s tank farms.

DEPARTMENT OF ENERGY—Continued
[In thousands of dollars]

	2019 Appropriations	Budget estimate	Committee recommendation	Committee recommendation compared to—	
				2019 Appropriations	Budget estimate
TOTAL, DEPARTMENTAL ADMINISTRATION (net)	165,858	117,545	156,000	- 9,858	+ 38,455
OFFICE OF THE INSPECTOR GENERAL					
Office of the inspector general	51,330	54,215	54,215	+ 2,885	.....
TOTAL, OFFICE OF THE INSPECTOR GENERAL	51,330	54,215	54,215	+ 2,885	.....
INTERNATIONAL AFFAIRS .....	.....	36,100	.....	.....	- 36,100
TOTAL, ENERGY PROGRAMS	13,472,407	8,349,265	14,996,718	+ 1,524,311	+ 6,647,453
ATOMIC ENERGY DEFENSE ACTIVITIES					
NATIONAL NUCLEAR SECURITY ADMINISTRATION					
WEAPONS ACTIVITIES					
Directed stockpile work:					
Life Extension Programs and Major alterations B61 Life extension program	794,049	792,611	792,611	- 1,438	.....
W76 Life extension program	48,888	.....	.....	- 48,888	.....
W76-2 Modification program	65,000	10,000	10,000	- 55,000	.....
W88 Alteration program	304,285	304,186	304,186	- 99	.....
W80-4 Life extension program	654,766	898,551	898,551	+ 243,785	.....
IW-1	53,000	.....	.....	- 53,000	.....
W87-1 Modification Program .....	.....	112,011	112,011	+ 112,011	.....
Subtotal, Life Extension Programs and Major alterations	1,919,988	2,117,359	2,117,359	+ 197,371	.....
Stockpile systems:					
B61 Stockpile systems	64,547	71,232	71,232	+ 6,685	.....
W76 Stockpile systems	84,300	89,804	89,804	+ 5,504	.....
W78 Stockpile systems	81,329	81,299	81,299	- 30	.....
W80 Stockpile systems	80,204	85,811	85,811	+ 5,607	.....

B83 Stockpile systems	35,082	51,543	51,543	+ 16,461	.....
W87 Stockpile systems	83,107	98,262	98,262	+ 15,155	.....
W88 Stockpile systems	170,913	157,815	157,815	- 13,098	.....
Subtotal, Stockpile systems	599,482	635,766	635,766	+ 36,284	.....
Weapons dismantlement and disposition	56,000	47,500	56,000	.....	+ 8,500
Stockpile services:					
Production support	510,000	543,964	543,964	+ 33,964	.....
Research and Development support	36,150	39,339	39,339	+ 3,189	.....
Research and Development certification and safety	201,840	236,235	236,235	+ 34,395	.....
Management, technology, and production	300,736	305,000	305,000	+ 4,264	.....
Subtotal, Stockpile services	1,048,726	1,124,538	1,124,538	+ 75,812	.....
Strategic materials:					
Uranium sustainment	87,182	94,146	94,146	+ 6,964	.....
Plutonium sustainment:					
Plutonium sustainment operations	286,282	691,284	698,844	+ 412,562	+ 7,560
Plutonium pit production project	75,000	21,156	21,156	- 53,844	.....
Subtotal, Plutonium sustainment	361,282	712,440	720,000	+ 358,718	+ 7,560
Tritium sustainment	290,275	269,000	269,000	- 21,275	.....
Lithium sustainment	29,135	28,800	28,800	- 335	.....
Domestic uranium enrichment	50,000	140,000	70,000	+ 20,000	- 70,000
HEU downblend .....	.....	.....	90,000	+ 90,000	+ 90,000
Strategic materials sustainment	216,196	256,808	256,808	+ 40,612	.....
Subtotal, Strategic materials	1,034,070	1,501,194	1,528,754	+ 494,684	+ 27,560
Subtotal, Directed stockpile work	4,658,266	5,426,357	5,462,417	+ 804,151	+ 36,060
Research, Development, Test and Evaluation (RDT&E):					
Science:					
Advanced certification	57,710	57,710	57,710	.....	.....
Primary assessment technologies	89,313	95,169	95,169	+ 5,856	.....
Dynamic materials properties	120,000	133,800	136,306	+ 16,306	+ 2,506
Advanced radiography	32,544	32,544	32,544	.....	.....
Secondary assessment technologies	77,553	77,553	77,553	.....	.....
Academic alliances and partnerships	53,364	44,625	70,000	+ 16,636	+ 25,375

DEPARTMENT OF ENERGY—Continued
[In thousands of dollars]

	2019 Appropriations	Budget estimate	Committee recommendation	Committee recommendation compared to—	
				2019 Appropriations	Budget estimate
Enhanced capabilities for subcritical experiments	50,000	145,160	125,160	+ 75,160	– 20,000
Subtotal, Science	480,484	586,561	594,442	+ 113,958	+ 7,881
Engineering:					
Enhanced surety	39,717	46,500	46,500	+ 6,783	.....
Weapons system engineering assessment technology	23,029	.....	.....	– 23,029	.....
Delivery environments (formerly Weapon systems engineering assessment technology) .....	.....	35,945	35,945	+ 35,945	.....
Nuclear survivability	48,230	53,932	53,932	+ 5,702	.....
Enhanced surveillance	45,147	57,747	57,747	+ 12,600	.....
Stockpile responsiveness	34,000	39,830	100,000	+ 66,000	+ 60,170
Subtotal, Engineering	190,123	233,954	294,124	+ 104,001	+ 60,170
Inertial confinement fusion ignition and high yield:					
Ignition and other stockpile programs	101,140	55,649	110,000	+ 8,860	+ 54,351
Diagnostics, cryogenics and experimental support	77,915	66,128	78,000	+ 85	+ 11,872
Pulsed power inertial confinement fusion	6,596	8,571	9,000	+ 2,404	+ 429
Joint program in high energy density laboratory plasmas	8,492	12,000	5,000	– 3,492	– 7,000
Facility operations and target production	350,791	338,247	368,000	+ 17,209	+ 29,753
Subtotal, Inertial confinement fusion ignition and high yield	544,934	480,595	570,000	+ 25,066	+ 89,405
Advanced simulation and computing:					
Advanced simulation and computing	670,119	789,849	789,849	+ 119,730	.....
Construction:					
18–D–670 Exascale class computer cooling equipment, LANL	24,000	.....	.....	– 24,000	.....
18–D–620 Exascale computing facility modernization project, LLNL	23,000	50,000	50,000	+ 27,000	.....
Subtotal, Construction	47,000	50,000	50,000	+ 3,000	.....
Subtotal, Advanced simulation and computing	717,119	839,849	839,849	+ 122,730	.....

Advanced manufacturing development:					
Additive manufacturing	12,000	18,500	22,000	+ 10,000	+ 3,500
Component manufacturing development	38,644	48,410	52,000	+ 13,356	+ 3,590
Process technology development	30,914	69,998	70,000	+ 39,086	+ 2
Subtotal, Advanced manufacturing development	81,558	136,908	144,000	+ 62,442	+ 7,092
Subtotal, RDT&E	2,014,218	2,277,867	2,442,415	+ 428,197	+ 164,548
Infrastructure and Operations:					
Operations of facilities	870,000	905,000	905,000	+ 35,000	.....
Safety and environmental operations	110,000	119,000	130,000	+ 20,000	+ 11,000
Maintenance and repair of facilities	515,000	456,000	515,000	.....	+ 59,000
Recapitalization:					
Infrastructure and safety	450,000	447,657	460,000	+ 10,000	+ 12,343
Capability based investments	109,057	135,341	140,000	+ 30,943	+ 4,659
Subtotal, Recapitalization	559,057	582,998	600,000	+ 40,943	+ 17,002
Subtotal, Infrastructure and Operations	2,054,057	2,062,998	2,150,000	+ 95,943	+ 87,002
Construction:					
19-D-670 138kV Power Transmission System Replacement, NNSS		6,000	6,000	+ 6,000	.....
18-D-680 Material staging facility, PX	24,000	.....	24,000	.....	+ 24,000
18-D-650 Tritium production capability, SRS .....	.....	27,000	27,000	+ 27,000	.....
18-D-690 Lithium production capability, Y-12	19,000	.....	.....	- 19,000	.....
18-D-690 Lithium processing facility, Y-12 (formerly Lithium production capability) .....	.....	32,000	32,000	+ 32,000	.....
17-D-640 U1a complex enhancements project, NNSA	20,000	35,000	35,000	+ 15,000	.....
17-D-630 Electrical distribution system, LLNL .....	.....	.....	.....	.....	.....
16-D-515 Albuquerque Complex project	47,953	.....	.....	- 47,953	.....
15-D-612 Emergency Operations Center, LLNL .....	.....	5,000	5,000	+ 5,000	.....
15-D-611 Emergency Operations Center, SNL .....	.....	4,000	4,000	+ 4,000	.....
15-D-301 HE Science & Engineering Facility, PX .....	.....	123,000	123,000	+ 123,000	.....
06-D-141 Uranium Processing Facility, Y-12	703,000	745,000	745,000	+ 42,000	.....
Chemistry and metallurgy replacement (CMRR):					
04-D-125 Chemistry and metallurgy replacement project, LANL	219,842	168,444	168,444	- 51,398	.....
Subtotal, CMRR	219,842	168,444	168,444	- 51,398	.....
Subtotal, Construction	1,033,795	1,145,444	1,169,444	+ 135,649	+ 24,000

DEPARTMENT OF ENERGY—Continued
[In thousands of dollars]

	2019 Appropriations	Budget estimate	Committee recommendation	Committee recommendation compared to—	
				2019 Appropriations	Budget estimate
Subtotal, Infrastructure and Operations	3,087,852	3,208,442	3,319,444	+ 231,592	+ 111,002
Secure transportation asset:					
Operations and equipment	176,617	209,502	209,502	+ 32,885	.....
Program direction	102,022	107,660	107,660	+ 5,638	.....
Subtotal, Secure transportation asset	278,639	317,162	317,162	+ 38,523	.....
Defense nuclear security:					
Defense nuclear security	690,638	778,213	765,000	+ 74,362	- 13,213
Construction:					
17–D–710 West end protected area reduction project, Y–12			35,000	+ 35,000	+ 35,000
Subtotal, Defense nuclear security	690,638	778,213	800,000	+ 109,362	+ 21,787
Information technology and cyber security	221,175	309,362	309,362	+ 88,187	.....
Legacy contractor pensions	162,292	91,200	91,200	- 71,092	.....
Use of prior year balances	- 13,080	.....	.....	+ 13,080	.....
Subtotal, Weapons Activities	11,100,000	12,408,603	12,742,000	+ 1,642,000	+ 333,397
TOTAL, WEAPONS ACTIVITIES	11,100,000	12,408,603	12,742,000	+ 1,642,000	+ 333,397
DEFENSE NUCLEAR NONPROLIFERATION					
Defense Nuclear Nonproliferation Programs:					
Global material security:					
International nuclear security	46,339	48,839	48,839	+ 2,500	.....
Domestic radiologic security	127,433	90,513	137,433	+ 10,000	+ 46,920
International radiologic security	78,907	60,827	78,907	.....	+ 18,080
Nuclear smuggling detection	154,429	142,171	154,429	.....	+ 12,258
Subtotal, Global material security	407,108	342,350	419,608	+ 12,500	+ 77,258

Material management and minimization:					
HEU Reactor Conversion		114,000	99,000	+ 99,000	- 15,000
Nuclear material removal	32,925	32,925	32,925		
Material disposition	225,869	186,608	186,608	- 39,261	
Laboratory and partnership support	35,000		10,000	- 25,000	+ 10,000
Subtotal, Material management and minimization	293,794	333,533	328,533	+ 34,739	- 5,000
Nonproliferation and arms control	129,703	137,267	140,000	+ 10,297	+ 2,733
Defense nuclear nonproliferation R&D:					
Proliferation detection	281,521	304,040	291,500	+ 9,979	- 12,540
Nuclear detonation detection	195,749	191,317	195,749		+ 4,432
Nonproliferation fuels development	98,300		15,000	- 83,300	+ 15,000
Nonproliferation Stewardship program			22,500	+ 22,500	+ 22,500
Subtotal, Defense nuclear nonproliferation R&D	575,570	495,357	524,749	- 50,821	+ 29,392
Nonproliferation construction:					
99-D-143 Mixed Oxide (MOX) Fuel Fabrication Facility, SRS	220,000	220,000	220,000		
18-D-150 Surplus plutonium disposition project, SRS		79,000	79,000	+ 79,000	
Subtotal, Nonproliferation construction	220,000	299,000	299,000	+ 79,000	
Legacy contractor pensions	28,640	13,700	13,700	- 14,940	
Subtotal, Defense Nuclear Nonproliferation Programs	1,654,815	1,621,207	1,725,590	+ 70,775	+ 104,383
Nuclear counterterrorism and incident response program:					
Nuclear counterterrorism and incident response	319,185			- 319,185	
Emergency Operations		35,545	35,545	+ 35,545	
Counterterrorism and Counterproliferation		336,550	323,865	+ 323,865	- 12,685
Subtotal, Nuclear counterterrorism and incident response program	319,185	372,095	359,410	+ 40,225	- 12,685
Use of prior-year balances	- 25,000			+ 25,000	
Subtotal, Defense Nuclear Nonproliferation	1,949,000	1,993,302	2,085,000	+ 136,000	+ 91,698
Rescission	- 19,000			+ 19,000	

DEPARTMENT OF ENERGY—Continued
 [In thousands of dollars]

	2019 Appropriations	Budget estimate	Committee recommendation	Committee recommendation compared to—	
				2019 Appropriations	Budget estimate
TOTAL, DEFENSE NUCLEAR NONPROLIFERATION	1,930,000	1,993,302	2,085,000	+ 155,000	+ 91,698
NAVAL REACTORS					
Naval reactors development	514,951	531,205	516,205	+ 1,254	– 15,000
Columbia-class reactor systems development	138,000	75,500	75,500	– 62,500	.....
S8G Prototype refueling	250,000	155,000	170,000	– 80,000	+ 15,000
Naval reactors operations and infrastructure	525,764	553,591	553,591	+ 27,827	.....
Program direction	48,709	50,500	50,500	+ 1,791	.....
Construction:					
20–D–931, KL Fuel development laboratory .....	.....	23,700	23,700	+ 23,700	.....
19–D–930 KS Overhead Piping	10,994	20,900	20,900	+ 9,906	.....
17–D–911 BL Fire System Upgrade	13,200	.....	.....	– 13,200	.....
14–D–901 Spent fuel handling recapitalization project, NRF	287,000	238,000	238,000	– 49,000	.....
Subtotal, Construction	311,194	282,600	282,600	– 28,594	.....
TOTAL, NAVAL REACTORS	1,788,618	1,648,396	1,648,396	– 140,222	.....
FEDERAL SALARIES AND EXPENSES	410,000	434,699	434,699	+ 24,699	.....
TOTAL, NATIONAL NUCLEAR SECURITY ADMINISTRATION	15,228,618	16,485,000	16,910,095	+ 1,681,477	+ 425,095
DEFENSE ENVIRONMENTAL CLEANUP					
Closure sites administration	4,889	4,987	4,987	+ 98	.....
Richland:					
River corridor and other cleanup operations	193,692	139,750	236,102	+ 42,410	+ 96,352
Central plateau remediation	660,358	472,949	654,800	– 5,558	+ 181,851
RL Community and regulatory support	10,121	5,121	10,121	.....	+ 5,000

Construction:					
18-D-404 WESF Modifications and capsule storage	1,000	11,000	11,000	+ 10,000	.....
15-D-401 Containerized sludge removal			- 11,800	- 11,800	- 11,800
Subtotal, Construction	1,000	11,000	- 800	- 1,800	- 11,800
Subtotal, Richland	865,171	628,820	900,223	+ 35,052	+ 271,403
Office of River Protection:					
Waste treatment and immobilization plant commissioning	15,000	15,000	15,000	.....	.....
Rad liquid tank waste stabilization and disposition	771,947	677,460	775,000	+ 3,053	+ 97,540
Construction:					
15-D-409 Low activity waste pretreatment system	56,053	.....	.....	- 56,053	.....
18-D-16 Waste treatment and immobilization plant—LBL/Direct feed LAW	655,000	640,000	776,000	+ 121,000	+ 136,000
01-D-16 D High-level waste facility	60,000	30,000	25,000	- 35,000	- 5,000
01-D-16 E Pretreatment facility	15,000	20,000	15,000	.....	- 5,000
Subtotal, Construction	786,053	690,000	816,000	+ 29,947	+ 126,000
ORP Low-level waste offsite disposal .....	.....	10,000	10,000	+ 10,000	.....
Subtotal, Office of River Protection	1,573,000	1,392,460	1,616,000	+ 43,000	+ 223,540
Idaho National Laboratory:					
Idaho cleanup and waste disposition	420,000	331,354	380,000	- 40,000	+ 48,646
Idaho community and regulatory support	3,200	3,500	3,500	+ 300	.....
ID Excess facilities D&D	10,000	.....	.....	- 10,000	.....
Use of prior year balances .....	.....	.....	- 10,000	- 10,000	- 10,000
Total, Idaho National Laboratory	433,200	334,854	373,500	- 59,700	+ 38,646
NNSA sites and Nevada offsites:					
Lawrence Livermore National Laboratory	1,704	1,727	1,727	+ 23	.....
Separations Process Research Unit	15,000	15,300	15,300	+ 300	.....
Nevada	60,136	60,737	60,737	+ 601	.....
Sandia National Laboratory	2,600	2,652	2,652	+ 52	.....
Los Alamos National Laboratory	220,000	195,462	220,000	.....	+ 24,538
LLNL Excess facilities D&D	25,000	128,000	65,000	+ 40,000	- 63,000
Total, NNSA sites and Nevada off-sites	324,440	403,878	365,416	+ 40,976	- 38,462

DEPARTMENT OF ENERGY—Continued
[In thousands of dollars]

	2019 Appropriations	Budget estimate	Committee recommendation	Committee recommendation compared to—	
				2019 Appropriations	Budget estimate
Oak Ridge Reservation:					
OR Nuclear facility D&D	189,000	93,693	216,000	+ 27,000	+ 122,307
U233 disposition program	52,300	45,000	55,000	+ 2,700	+ 10,000
OR Cleanup and disposition	74,000	82,000	101,300	+ 27,300	+ 19,300
Construction:					
17-D-401 On-site waste disposal facility	10,000	15,269	.....	- 10,000	- 15,269
14-D-403 Outfall 200 mercury treatment facility	76,000	49,000	70,000	- 6,000	+ 21,000
Subtotal, Construction	86,000	64,269	70,000	- 16,000	+ 5,731
OR Community & regulatory support	5,700	4,819	2,700	- 3,000	- 2,119
OR Technology development and deployment	3,000	3,000	5,000	+ 2,000	+ 2,000
Total, Oak Ridge Reservation	410,000	292,781	450,000	+ 40,000	+ 157,219
Savannah River Site:					
SR Site risk management operations:					
SR Site risk management operations	489,460	490,613	490,613	+ 1,153	.....
Construction:					
18-D-402 Emergency Operations Center Replacement, SR	1,259	6,792	6,792	+ 5,533	.....
Subtotal, SR Site risk management operations	490,719	497,405	497,405	+ 6,686	.....
SR Community and regulatory support	11,249	4,749	11,249	.....	+ 6,500
SR Radioactive liquid tank waste stabilization and disposition	696,869	797,706	820,106	+ 123,237	+ 22,400
Construction:					
20-D-402 Advanced Manufacturing Collaborative Facility (AMC) .....	.....	50,000	50,000	+ 50,000	.....
20-D-401 Saltstone Disposal Unit #10, 11, 12 .....	.....	500	500	+ 500	.....
19-D-701 SR Security system replacement	10,000	.....	6,279	- 3,721	+ 6,279
18-D-402 Saltstone disposal unit #8/9	7,577	51,750	20,000	+ 12,423	- 31,750
17-D-402 Saltstone disposal Unit #7, SRS	41,243	40,034	40,034	- 1,209	.....
05-D-405 Salt waste processing facility, SRS	130,000	20,988	24,059	- 105,941	+ 3,071

Subtotal, Construction	188,820	163,272	140,872	- 47,948	- 22,400
Use of prior year balances					
Total, Savannah River Site	1,387,657	1,463,132	1,469,632	+ 81,975	+ 6,500
Waste Isolation Pilot Plant:					
Waste Isolation Pilot Plant	311,695	299,088	304,353	- 7,342	+ 5,265
Construction:					
15-D-411 Safety significant confinement ventilation system, WIPP	84,212	58,054	58,054	- 26,158	
15-D-412 Exhaust shaft, WIPP	1,000	34,500	34,500	+ 33,500	
Total, Waste isolation pilot plant	396,907	391,642	396,907		+ 5,265
Program direction	298,500	278,908	293,734	- 4,766	+ 14,826
Program support	12,979	12,979	12,979		
Safeguards and Security	304,434	317,622	317,622	+ 13,188	
Technology development	25,000		25,000		+ 25,000
Use of prior year balances	- 7,577			+ 7,577	
Subtotal, Defense Environmental Cleanup	6,028,600	5,522,063	6,226,000	+ 197,400	+ 703,937
Rescission	- 4,600	- 15,562		+ 4,600	+ 15,562
TOTAL, DEFENSE ENVIRONMENTAL CLEAN UP	6,024,000	5,506,501	6,226,000	+ 202,000	+ 719,499
OTHER DEFENSE ACTIVITIES					
Environment, health, safety and security:					
Environment, health, safety and security	133,839	139,628	136,345	+ 2,506	- 3,283
Program direction	69,000	72,881	69,000		- 3,881
Subtotal, Environment, Health, safety and security	202,839	212,509	205,345	+ 2,506	- 7,164
Enterprise assessments:					
Enterprise assessments	24,068	24,068	24,068		
Program direction	52,702	57,211	54,711	+ 2,009	- 2,500
Subtotal, Enterprise assessments	76,770	81,279	78,779	+ 2,009	- 2,500
Specialized security activities	266,378	254,578	271,000	+ 4,622	+ 16,422

DEPARTMENT OF ENERGY—Continued
[In thousands of dollars]

	2019 Appropriations	Budget estimate	Committee recommendation	Committee recommendation compared to—	
				2019 Appropriations	Budget estimate
Office of Legacy Management:					
Legacy management	140,575	283,767	142,767	+ 2,192	— 141,000
Program direction	18,302	19,262	19,262	+ 960	.....
Subtotal, Office of Legacy Management	158,877	303,029	162,029	+ 3,152	— 141,000
Defense related administrative support	151,689	179,092	173,092	+ 21,403	— 6,000
Office of hearings and appeals	5,739	4,852	4,852	— 887	.....
Use of prior year balances	— 2,000	.....	.....	+ 2,000	.....
TOTAL, OTHER DEFENSE ACTIVITIES	860,292	1,035,339	895,097	+ 34,805	— 140,242
DEFENSE NUCLEAR WASTE DISPOSAL .....	.....	26,000	.....	.....	— 26,000
TOTAL, ATOMIC ENERGY DEFENSE ACTIVITIES	22,112,910	23,052,840	24,031,192	+ 1,918,282	+ 978,352
POWER MARKETING ADMINISTRATIONS ¹					
SOUTHEASTERN POWER ADMINISTRATION					
Operation and maintenance:					
Purchase power and wheeling	68,824	80,419	70,704	+ 1,880	— 9,715
Program direction	6,500	6,597	6,597	+ 97	.....
Subtotal, Operation and maintenance	75,324	87,016	77,301	+ 1,977	— 9,715
Less alternative financing [PPW]	— 13,824	— 14,704	— 14,704	— 880	.....
Offsetting collections (for PPW)	— 55,000	— 65,715	— 56,000	— 1,000	+ 9,715
Offsetting collections (PD)	— 6,500	— 6,597	— 6,597	— 97	.....
TOTAL, SOUTHEASTERN POWER ADMINISTRATION .....	.....	.....	.....	.....	.....