

TITLE III—DEPARTMENT OF ENERGY**INTRODUCTION**

Funds recommended in Title III provide for all Department of Energy (Department) programs, including Energy Efficiency and Renewable Energy; Cybersecurity, Energy Security, and Emergency Response; Electricity; Nuclear Energy; Fossil Energy and Carbon Management; Naval Petroleum and Oil Shale Reserves; Strategic Petroleum Reserve; Northeast Home Heating Oil Reserve; Energy Information Administration; Non-Defense Environmental Cleanup; Uranium Enrichment Decontamination and Decommissioning Fund; Science; Nuclear Waste Disposal; Technology Transitions; Clean Energy Demonstrations; Advanced Research Projects Agency—Energy; Title 17 Innovative Technology Loan Guarantee Program; Advanced Technology Vehicles Manufacturing Loan Program; Tribal Energy Loan Guarantee Program; Indian Energy Policy and Programs; Departmental Administration; Office of the Inspector General; National Nuclear Security Administration (Weapons Activities, Defense Nuclear Nonproliferation, Naval Reactors, and Federal Salaries and Expenses); Defense Environmental Cleanup; Other Defense Activities; Power Marketing Administrations; and Federal Energy Regulatory Commission.

COMMITTEE RECOMMENDATION

The Department of Energy has requested a total budget of \$52,571,112,000 in fiscal year 2024 to fund programs in its four primary mission areas: science, energy, environment, and national security. The recommendation provides \$49,000,519,000 for the Department of Energy, \$555,160,000 above fiscal year 2023 enacted and \$3,570,593,000 below the budget request.

The Committee's recommendations for Department of Energy programs in fiscal year 2024 are described in the following sections. A detailed funding table is included at the end of this title.

CONGRESSIONAL DIRECTION

Article I, section 9 of the United States Constitution states, "No money shall be drawn from the Treasury but in consequence of Appropriations made by law."

The Committee continues to include the Department's reprogramming authority in statute to ensure that the Department carries out its programs consistent with congressional direction. This reprogramming authority is established at the program, project, or activity level, whichever is the most specific level of budget items identified in this Act and the Committee report accompanying this Act. The Committee also prohibits new starts through the use of reprogramming and includes other direction to improve public oversight of the Department's actions. In addition, the recommendation continues to include a general provision specifying which transfer authorities may be used for accounts funded by this Act.

The Committee counts on a timely and accessible executive branch in the course of fulfilling its constitutional role in the appropriations process. Requesting and receiving basic, factual information, including budget justification materials and responses to inquiries, is vital in order to ensure transparency and accountability. While some discussions internal to the executive branch may be pre-decisional in nature, the Committee's access to the facts, figures, and statistics that inform the decisions of the executive branch are not subject to the same sensitivities. The Committee shall have ready and timely access to information from the Department, Federally Funded Research and Development Centers, and any recipient of funding from this Act. Further, the Committee appreciates the ability for open and direct communication with all recipients of funding from this Act, and the Department shall not interfere with such communication and shall not penalize recipients of funding from this Act for such communication.

REPROGRAMMING AND TRANSFER GUIDELINES

The Committee requires the Department to inform the Committee promptly when a change in program execution and funding is required during the fiscal year. The Department's reprogramming requirements are detailed in the bill. To assist the Department in this effort, the following guidance is provided for programs and activities.

Definition.—A reprogramming includes the reallocation of funds from one activity to another within an appropriation. The recommendation includes a general provision providing internal reprogramming authority to the Department, as long as no program, project, or activity is increased or decreased by more than \$5,000,000 or 10 percent, whichever is less, compared to the levels in the table detailing the Committee's recommendations for the Department's various accounts. For construction projects, a reprogramming constitutes the reallocation of funds from one construction project to another project or a change of \$2,000,000 or 10 percent, whichever is less, in the scope of an approved project.

Criteria for Reprogramming.—A reprogramming should be made only when an unforeseen situation arises, and then only if delay of the project or activity until the next fiscal year would result in a detrimental impact to an agency program or priority. A reprogramming may also be considered if the Department can show that significant cost savings can accrue by increasing funding for an activity. Mere convenience or preference shall not be a factor for consideration. A reprogramming may not be employed to initiate new programs or to change program, project, or activity allocations specifically provided, denied, limited, or increased by the Congress in the Act or report.

Reporting and Approval Procedures.—In recognition of the security missions of the Department, the legislative guidelines allow the Secretary and the Administrator of the National Nuclear Security Administration jointly to waive the reprogramming restriction by certifying to the Committee that it is in the nation's security interest to do so. The Department shall not deviate from the levels for activities specified in the report that are below the level of the detail table, except through the regular notification procedures of the Committee. No funds may be added to programs for which funding has been denied. Any reallocation of new or prior-year budget authority or prior-year de-obligations or any request to implement a reorganization that includes moving previous appropriations between appropriations accounts must be submitted to the Committee in writing and shall not be implemented prior to approval by the Committee.

Transfers.—As in fiscal year 2023, funding actions into or out of accounts funded by this Act may only be made by transfer authorities provided by this or other appropriations Acts.

DEPARTMENTAL MANAGEMENT

Staff Augmentation.—The Committee is concerned with the number of laboratory contractor employees being utilized to augment sensitive positions traditionally reserved for senior federal employees and political appointees. The Department is directed to provide to the Committee, not later than 60 days after enactment, a report detailing the number, position, assignment duration, and cost, if reimbursable by the Department, on the aforementioned staff augmentations.

Future Year Energy Plan.—The Comptroller General of the United States is directed to review the interagency actions causing delayed implementation of section 304 of division B of the Consolidated Appropriations Act, 2012 (Public Law 112-74).

Commonly Recycled Paper.—The Department shall not expend funds for projects that knowingly use as a feedstock commonly recycled paper that is segregated from municipal solid waste or collected as part of a collection system that commingles commonly recycled paper with other solid waste at any point from the time of collection through materials recovery.

SBIR and STTR Programs.—The Department is directed to use the definition of research and development as provided by the Small Business Innovation Development Act of 1982 and Small Business Administration's "SBIR and STTR Program Policy Directive" for the purposes of the Department's SBIR and STTR programs. Additionally, the Department is directed to investigate the

feasibility of administering all or part of the SBIR and STTR programs for applied Departmental program offices through the Office of Technology Transitions and to report its findings to the Committee not later than 180 days after enactment of this Act.

Mortgaging Future-Year Awards.—The Committee remains concerned about the Department’s practice of making awards dependent on funding from future years’ appropriations. The fiscal year 2022 Act directed the Department to provide a briefing on how it can better track and provide information about the accounting of future-year awards by control point. The Committee is still awaiting this briefing and directs the Department to provide it not later than 15 days after enactment of this Act.

General Plant Projects.—In alignment with the requirements of section 3118(c) of the National Defense Authorization Act for FY2010, the Department is directed to notify the Committee at least 15 days prior to starting any General Plant Project unless the project is directed by this recommendation or explicitly included in the fiscal year 2024 budget request.

The Department is directed to develop a strategy to ensure entities that receive funding under this title and that are partnering with foreign-owned or partially foreign-owned organizations are protecting novel technologies from, and the flow of information to, off-shored entities. This strategy shall include mechanisms to conduct effective oversight to protect this technology and information. The Department is directed to provide to the Committee not later than 180 days after enactment of this Act a briefing on this strategy.

MULTI-PROGRAM DIRECTIVES

Commonwealth of Puerto Rico and the U.S. Virgin Islands.—The Committee notes that the fiscal year 2023 House report directed the Department to provide a briefing on its efforts to offer technical and other programmatic assistance to the Commonwealth of Puerto Rico regarding the implementation of innovative energy technologies.

DOE and USDA Interagency Working Group.—The Committee supports the establishment of the interagency working group to promote energy and develop technologies that will support and advance agricultural communities and domestic manufacturing, as required by the Agriculture Improvement Act of 2018. The Committee directs the working group to pursue joint activities related to the research and development of climate-controlled, affordable, deployable, energy- and water-efficient technologies for four-season food production platforms.

Energy-Water Nexus.—The Committee supports the Department’s ongoing efforts, including through the Water Security Grand Challenge, on advancing transformational technology and innovation to meet the global need for safe, secure, and affordable water. The Committee recognizes the impact of water security and availability on energy production and reliability and the growing interconnectivity between energy and water systems. The Department is directed to continue programs that provide technology innovation, modeling and assessment tools, technical support, planning tools to inform financing, and workforce development to focus on the energy-water nexus. The Committee supports the Department’s use of

a diverse portfolio of prizes; competitions; research, development, and demonstration; and other programs.

Industrial Sector Research and Development Activities.—The Committee supports the Department’s efforts to foster innovation and enable rapid scale up of cost-competitive, low-emissions technologies for the industrial sector. The Department is directed to provide to the Committee not later than 90 days after enactment of this Act a Multi-Year Program Plan (MYPP) to ensure coordination across all participating offices. The MYPP should be updated annually to reflect changes in technology development.

Quantum Computing International Sourcing.—The Committee is concerned that the implementation of foreign-sourced quantum technologies within the Department and its installations has great potential to pose a risk to our national security priorities. As the Department and its ecosystem partners continue to advance our quantum computing capabilities, it is imperative that the United States leverage its international allies to outpace our adversaries in the development of such technologies. The Committee appreciates the ongoing efforts of the United States to promote cooperation between United States, United Kingdom, and Australia on quantum computing under the AUKUS Quantum Arrangement and encourages increased cooperation under the AUKUS partnership. Accordingly, the Committee directs the Department to submit to the Committee not later than 180 days following the enactment of this Act a report on the international sourcing of quantum computing technologies, to include refrigeration systems, magnets, and other foundational components of such systems, and the threat posed by continued reliance on those components to the advancement of quantum computing technologies in the United States. Further, considering the advancements in quantum computing by rival international actors, this report should discuss strategies for sourcing quantum computing components exclusively from countries already party to a security cooperation agreement with the United States. This report should be unclassified but may include a classified annex.

Hydrogen Energy and Fuel Cell Coordination.—The Department is directed to coordinate its efforts in hydrogen energy and fuel cell technologies across EERE, FECM, NE, OE, the Office of Science, the Office of Clean Energy Demonstrations, the Advanced Research Projects Agency—Energy, and any other relevant program offices to maximize the effectiveness of investments in hydrogen-related activities.

ENERGY PROGRAMS

ENERGY EFFICIENCY AND RENEWABLE ENERGY

Appropriation, 2023	\$3,460,000,000
Budget estimate, 2024	3,826,116,000
Recommended, 2024	2,994,000,000
Comparison:	
Appropriation, 2023	– 466,000,000
Budget estimate, 2024	– 832,116,000

The Energy Efficiency and Renewable Energy account supports activities of the Office of Energy Efficiency and Renewable Energy, the Office of State and Community Energy Programs, the Office of

Manufacturing and Energy Supply Chains, and the Federal Energy Management Program.

The Office of Energy Efficiency and Renewable Energy (EERE) program is divided into three portfolios: sustainable transportation, renewable energy, and energy efficiency. The sustainable transportation portfolio, which consists of the vehicles, bioenergy, and hydrogen and fuel cell programs, focuses on efforts to enable greater vehicle electrification, commercially viable hydrogen fuel cell trucks, sustainable aviation fuel from biomass, and lower-pollution options for off-road vehicles, rail, and maritime transport. The renewable energy portfolio, which consists of the solar, wind, water, geothermal, and renewable energy integration programs, supports efforts to reduce the costs and accelerate the use and integration of renewables to contribute to a reliable, secure, and resilient electric grid. The energy efficiency portfolio, which consists of the industrial efficiency and decarbonization, advanced materials and manufacturing technologies, and buildings programs, develops cost-effective solutions to reduce energy consumption in plants, buildings, and homes.

The Office of State and Community Energy Programs (SCEP) focuses on efforts under the Weatherization Assistance Program and State Energy Program to increase energy affordability and efficiency by working with state and local-level implementation partners.

The Office of Manufacturing and Energy Supply Chains (MESC) prioritizes activities to strengthen and secure manufacturing and energy supply chains needed to modernize the nation's energy infrastructure.

The Federal Energy Management Program (FEMP) provides technical assistance and financial assistance to federal agencies to reduce energy consumption by identifying affordable solutions, facilitating public-private partnerships, and sharing and leveraging government best practices.

The Department is directed to maintain a balanced portfolio of research, development, demonstration, and deployment activities. The Department is encouraged to examine its portfolio on a regular basis and prioritize activities as necessary to maintain balance across research, development, demonstration, and deployment activities.

Aquatic Decarbonization.—The recommendation provides up to \$40,000,000 for crosscutting efforts that will contribute to multiple areas of ocean- and water-based energy technologies and support research, development, and infrastructure that leverages the Department's existing ocean-based assets and infrastructure. The Department is directed to provide to the Committee prior to the obligation of these funds a detailed spending plan highlighting which offices are contributing to this effort and the planned investments in research, development, and deployment, including infrastructure needs.

Industrial and Manufacturing Technologies.—The Committee supports the Department's efforts to increase energy efficiency, reduce emissions, and implement smart manufacturing improvements in the industrial and manufacturing sectors. The Committee notes the advances the Department has made in the research and development space and urges the Department to continue its focus

on research, demonstration, and deployment activities as well as technical assistance.

Manufactured Housing.—The Department is directed to coordinate with the Department of Housing and Urban Development when developing any energy standards for manufactured housing. The goal of such coordination should be that any future energy standards would be agreed upon by both Departments prior to being adopted into the Manufactured Housing Construction and Safety Standards (24 C.F.R. 3280).

Workforce Development.—The Committee supports training and workforce development programs that assist and support workers in trades and activities required for the continued growth of the U.S. energy sector, including training programs focused on building retrofits, the construction industry, and the electric vehicle industry. The Department is encouraged to continue to work with two-year, community and technical colleges; labor; and nongovernmental and industry consortia to pursue job training programs, including programs focused on displaced fossil fuel workers, that lead to an industry-recognized credential in the energy workforce.

SUSTAINABLE TRANSPORTATION

The recommendation provides \$35,000,000 to continue the SuperTruck III program in support of the electrification of medium- and heavy-duty vehicles, including Class-8 long haul trucks, and associated charging infrastructure.

Vehicle Technologies.—The recommendation provides not less than \$190,000,000 for Battery and Electrification Technologies, including for electric vehicle (EV) battery recycling technology.

The recommendation provides up to \$10,000,000 to improve 12-volt lead batteries for safety-critical EV applications.

The recommendation provides \$2,000,000 for a competitive solicitation for university-led teams to develop vehicular or structural strategies to reduce the likelihood of cascading effects during EV fires.

The recommendation provides \$2,000,000 for further research, development, and demonstration activities on advanced wireless power transfer technologies, including charging coils that reduce cost and improve performance of wireless power transfer, and to demonstrate wireless vehicle charging, including in colder climates that have high ratios of renewable energy generation.

The recommendation provides not less than \$35,000,000 for Decarbonization of Off-Road, Rail, Marine, and Aviation Technologies.

The recommendation provides \$10,000,000 for research and development of engine architectures that integrate low-carbon fuels like ethanol and biodiesel, including the performance of these engines on higher blends of renewable fuels.

The recommendation provides \$5,000,000 to continue research and development in advanced combustion and engine technology efficiency in propane engines used for medium- and heavy-duty on-road and non-road applications. This research should include direct injection and engine technology and the use of dimethyl ether.

The recommendation provides up to \$15,000,000 to advance energy efficiency improvements and low-carbon fuels for off-road applications. The Department is directed to prioritize applications in

ports, warehouses, and railyards. Within these funds, the recommendation provides up to \$5,000,000 for fluid power systems. These funds shall be awarded through a competitive solicitation in which university and industry teams are eligible to apply.

The recommendation provides \$100,000,000 for Vehicle Technology Integration and Deployment, previously called Outreach, Deployment, and Analysis.

The Department is directed to continue to support the Clean Cities alternative fuels deployment program focused on vehicles that can deliver lower emissions and meet customer needs, which can include vehicles powered by biofuels, electricity, hydrogen, natural gas, renewable natural gas, propane, and renewable propane. The nation's Clean Cities Coalitions are uniquely suited to assist state and local governments, school districts, and public and private sector fleets with successful implementation of the sustainable transportation programs. Within available funds, the recommendation provides not less than \$65,000,000 for deployment through the Clean Cities program, including not less than \$20,000,000 in direct cooperative agreements with the Clean Cities Coalitions and not less than \$40,000,000 for competitive grants to support alternative fuel, infrastructure, new mobility, and vehicle deployment activities. When issuing competitive grants in support of these activities, the Department is encouraged to include some awards that range from \$500,000 to \$1,000,000 each and to include at least one Clean Cities coalition partner. The Committee encourages the Department to ensure balance in the award of funds to achieve varied aims in fostering broader adoption of clean vehicles and installation of supporting infrastructure. The Committee further encourages the Department to prioritize projects that can contribute the greatest reductions in lifecycle emissions. The Committee encourages the Department to work with the Department of Transportation and industry on coordinating efforts to deploy EV charging infrastructure. The Committee encourages the Department to explore ways in which the Clean Cities Program can leverage funding to provide greater support, including through grants, technical assistance, and community engagement, for electrification efforts.

The recommendation provides not less than \$5,000,000 for electric vehicle workforce development activities. The Department is encouraged to build upon its existing partnerships with the GridEd workforce training program to advance a national electric vehicle workforce.

The Department is encouraged to support the development of all-electric harbor assist tugs designed for deployment in harbors within the Great Lakes Region and other inland waterways.

The recommendation provides \$40,000,000 for Energy Efficient Mobility Systems. The recommendation includes no funding for the new requested activity to link workforce development and clean energy outcomes in underserved communities.

The Committee recognizes combusting hydrogen in internal combustion engines may offer a practical pathway to zero-carbon fuels. The recommendation provides \$10,000,000 for novel engine designs that can achieve significant efficiency improvements in hydrogen combustion. The Department is encouraged to support research and development for hydrogen combustion by two-stroke opposed piston engines.

The Committee encourages the Department, in coordination with the Joint Office of Energy and Transportation (Joint Office), to ensure that analysis and accommodation of the unique needs of medium- and heavy-duty electric vehicle charging infrastructure are included in electric vehicle infrastructure deployment and guidance.

The Committee is concerned about the challenge of remotely located charging sites, especially those not in proximity to the existing electric grid as well as in grid-constrained areas. The Committee encourages the Hydrogen Fuel Cells Technology Office to coordinate with the Joint Office to examine the potential of hydrogen to provide power for electric vehicle charging in grid-constrained locations.

The Committee recognizes the increasing domestic manufacturing opportunities for electric battery production for vehicles. The Committee encourages the Department to expand domestic manufacturing opportunities for electric vehicle batteries and associated technologies, including advanced battery charge control optimization technologies that are proven to improve safety, extend cycle life, and enhance charging speeds, including cold weather charging.

The Committee notes there are ongoing efforts to further the use of technologies that will reduce emissions in existing locomotive fleets, such as different blends of renewable diesel and biodiesel, as well as to accelerate the commercial viability of alternative propulsion methods, including batteries and hydrogen fuel cells. The Committee directs the Department to regularly consult with railroads and rail manufacturers and suppliers to determine which research projects will best advance the commercial viability of these respective technologies and help to identify the pathway to decarbonization for the industry.

The Committee encourages the Department to coordinate electric vehicle and related infrastructure funding with other relevant agencies.

The Committee directs EERE and the Office of Fossil Energy and Carbon Management to jointly issue a competitive solicitation for research, development, and demonstration projects that combine both recycling technologies and rare earth element separation technologies.

Bioenergy Technologies.—The recommendation provides not less than \$45,000,000 for feedstock technologies research and the Biomass Feedstock National User Facility and \$40,000,000 for algae-related activities.

The recommendation provides \$4,000,000 for research and development of the increased viability of renewable propane to pursue new production pathways to sustainable aviation fuel and other high-impact products from municipal waste; agricultural residue; forest resources; and fats, oils, and grease.

The Committee directs the Department to work with the U.S. Department of Agriculture to update the 2016 Billion Ton Study and report on the availability of all potential feedstock sources for biofuels, including from forestry and agriculture, and evaluate the true potential of crop-based biofuels such as ethanol, biodiesel and renewable diesel, as well as crop-based aviation fuel. The updated study should further explore the potential of biomass-based feed-

stock coupled with carbon capture and sequestration to generate fuels with negative carbon intensities.

The Committee encourages the Department's continued work on sustainable aviation fuels. The Committee is aware that the Department has convened a lifecycle greenhouse gas emissions working group to define and agree on the appropriate science-based methodology for establishing lifecycle emissions reductions under the Sustainable Aviation Fuel Grand Challenge. The Department is directed to provide to the Committee not later than 90 days after enactment of this Act a report outlining carbon accounting tools under consideration by the working group and an assessment of how feedstocks compare under the Argonne GREET model versus other models.

Hydrogen and Fuel Cell Technologies.—The Department is directed to maintain a diverse program that focuses on early-, mid-, and late-stage research and development and technology acceleration, including market transformation. The Department is directed to continue to emphasize hydrogen production and the development of hydrogen refueling infrastructure nationwide to accelerate the adoption of zero-emission fuel cell transportation. The Department is directed to maintain regular consultation with industry to avoid duplication of private-sector activities and ensure retention of fuel cell technology and systems development in the United States.

The Department is directed to continue research and development activities aimed at reducing the cost of hydrogen production, storage, and distribution. This work should include novel onboard hydrogen tank systems, trailer delivery systems, and development of systems and equipment for hydrogen pipelines. In addition, the Department is directed to continue research and development activities reducing cost, increasing durability, and improving the efficiency and performance of critical hydrogen hardware such as measurement devices for fueling stations, hydrogen compressor components, and other hydrogen station dispensing components.

The recommendation provides not less than \$100,000,000 for H₂@Scale activities to support the development of hydrogen as a clean energy resource for hard-to-electrify transportation applications and to help build out the infrastructure needed to transport and store hydrogen.

The recommendation provides up to \$60,000,000 for technologies to advance hydrogen use for hard-to-electrify transportation applications, including locomotives, maritime shipping, and aviation.

The Committee notes that hydrogen carriers can play a critical role in enabling widespread adoption of hydrogen energy for commercial, industrial, and transportation use. The recommendation provides \$10,000,000 for hydrogen carriers for delivery, storage, and release. The Committee directs the Department to coordinate its work on hydrogen carriers with the national laboratories, the Office of Science, and the Office of Clean Energy Demonstrations.

The Committee supports the Department's continued activities for high temperature electrolyzer development and integrated pilot level technology testing and validation, including at national laboratories.

The Department is directed to assess how alkaline and proton exchange membrane (PEM) electrolyzers respond to variable oper-

ation conditions associated with electricity from intermittent sources, specifically the impact on performance and lifetime. The Department is directed to conduct large-scale testing and analysis in conjunction with an electric power research organization, utilities, and other stakeholders. The Department is directed to conduct tests under various conditions and configurations and in geographically diverse regions, including the Northeast. The results shall be made publicly available to contribute to grid reliability and plant design optimization.

RENEWABLE ENERGY

The Committee supports the work the Wind Energy Technologies Office and the Water Power Technologies Office are doing to support university-led research projects related to resource characterization, site planning, aquaculture assessments, community outreach, and planning for long term environmental monitoring for applications of marine energy and floating offshore wind technologies to support sustainable, scalable aquaculture production.

Solar Energy Technologies.—The recommendation provides \$60,000,000 for Concentrating Solar Power Technologies and \$77,000,000 for Photovoltaic Technologies.

The recommendation provides \$35,000,000 for Balance of Systems Soft Cost Reduction. The Committee is encouraged by the success of the SolarAPP+ program in facilitating easier, less expensive, faster, and more efficient permitting for solar projects through automation. The Department is encouraged to explore ways in which similar automated processes can increase efficiency and predictability in establishing interconnections with the utility distribution grid.

The recommendation provides not less than \$5,000,000 for the National Community Solar Partnership program.

The Committee supports the Department's decision to award funding for the Cadmium Telluride (CdTe) Accelerator Consortium as a comprehensive and systematic approach to support CdTe photovoltaics. This work will advance low-cost manufacturing techniques and domestic research in this important domestic sector. The Committee notes that the United States is a leader in CdTe manufacturing, contributing to high-value job production in the Midwest and elsewhere. The recommendation provides not less than \$30,000,000 for research, development, and demonstration activities related to cadmium telluride. This work shall align with the goals of the technology roadmap for research: reducing CdTe module manufacturing costs, addressing supply chain challenges, achieving greater cell and module efficiency, cutting CdTe solar costs while extending solar panel life, and increasing the global market share of domestically produced photovoltaics.

The recommendation provides \$25,000,000 for research, development, and demonstration activities related to perovskites.

The Committee is aware of and supports the recently established Perovskite Accelerator for Commercializing Technologies (PACT) Center, which has been established for testing the durability of perovskite photovoltaics. The Department is encouraged to consider establishment of a companion research accelerator to advance the underpinnings of the technology, following the model established

for the CdTe Consortium that was announced by the Department in 2020.

The Department is directed to continue supporting the regional demonstration sites under the Solar Energy Technologies Office.

The Committee supports research activities to develop advanced low-cost manufacturing process technologies, including reduced material consumption and faster processing with fewer steps. The Committee also supports early-stage research on photovoltaics based on earth-abundant materials focusing on scalable production methods, material stability, and ultrahigh efficiency tandem photovoltaic cell manufacturing approaches.

Wind Energy.—The recommendation provides not less than \$18,000,000 for distributed wind technologies to support research activities that lead to lower costs and increased deployments of distributed wind systems for rural homes, farms, and other applications.

Within available funds for offshore wind, the recommendation provides \$10,000,000 for continued development of floating foundation technologies, including concrete, for floating wind turbines.

Within available funds for offshore wind, the recommendation provides \$6,000,000 for Centers of Excellence focused on offshore wind energy engineering, infrastructure, supply chain, transmission, and other pertinent issues required to support offshore wind in the United States.

The Committee supports collaborations with the National Sea Grant College Program for regional capacity to provide science-based community engagement associated with floating offshore wind development and encourages continuation and expansion of its efforts.

Water Power.—The recommendation provides \$50,000,000 for Hydropower Technologies and \$105,000,000 for Marine Energy.

The Committee remains supportive of the Department's ongoing scoping activities toward establishing a network of hydropower testing facilities. The recommendation provides up to \$10,000,000 to begin implementation of the recent scoping analysis, including design and engineering activities.

The recommendation provides up to \$5,000,000 for irrigation modernization demonstration and deployment activities including physical sites and digital tools that advance energy, water, environmental, community, and agricultural benefits.

The recommendation provides up to \$10,000,000 for the purposes of sections 242 of the Energy Policy Act of 2005.

Within available funds, the recommendation provides \$24,000,000 for the Powering the Blue Economy efforts. The Department is directed to continuing leveraging existing core capabilities at national laboratories to execute this work, in partnership with universities and industry.

Within available funds, the recommendation provides not less than \$10,000,000 for continuation of foundational research activities led by the National Marine Energy Centers and affiliated universities and research institutions.

Within available funds for Marine Energy, the recommendation provides up to \$15,000,000 to address infrastructure needs at marine energy technology testing sites.

The Department is directed to continue to coordinate with the U.S. Navy and other federal agencies on marine energy technology development for national security and other applications.

The Committee supports the Department's engagement on research and workforce development with U.S. universities, particularly with its National Marine Renewable Energy Centers. The Committee encourages the Department to continue its Powering the Blue Economy efforts, including crosscutting initiatives within EERE and with other federal partners that integrate marine energy harvesting, energy storage, and continuous, wide area environmental monitoring.

Geothermal Technologies.—The recommendation provides not less than \$100,000,000 for competitively awarded enhanced geothermal system demonstrations (EGS) and next-generation geothermal demonstration projects in diverse geographic areas. The Department is encouraged to prioritize EGS demonstration projects that have previously received earlier-stage competitive Frontier Observatory for Research in Geothermal Energy (FORGE) funding to test and validate their technology. The Department is directed to include demonstration projects in an area with no obvious surface expression or to develop deep, direct use geothermal technologies to distribute geothermal heat through an integrated energy system or district heating system. The Department is directed to consider geothermal demonstrations in which water, at that depth, would reach supercritical conditions and demonstrate incremental improvements toward producing supercritical water at the surface. In addition, the Committee urges the Geothermal Technologies Office to focus on the development of a pathway to producing high-temperature geothermal energy on a commercial scale.

Within available funds, the recommendation provides \$40,000,000 for FORGE.

ENERGY EFFICIENCY

Advanced Manufacturing.—The Committee accepts the budget request proposal to split the Advanced Manufacturing Office into two new control points: the Industrial Efficiency and Decarbonization Office and the Advanced Materials and Manufacturing Technologies Office. The Committee notes the budget request lacks clarity on specific funding levels for numerous ongoing programs. The Committee directs the Department to provide additional information on funding levels for the Manufacturing Demonstration Facility, the Critical Materials Institute, and the Clean Energy Manufacturing Innovation Institutes.

Industrial Efficiency and Decarbonization.—Within available funds, the recommendation includes \$10,000,000 to support research and development of innovative technologies aimed at both increasing U.S. technological and economic competitiveness and reducing emissions in the production of iron, steel, and steel mill products.

Within available funds, the recommendation provides \$20,000,000 for continued research for energy efficiency improvement and emissions reduction in the chemical industry, including dynamic catalyst science coupled with data analytics.

Within the available funds, the recommendation provides \$20,000,000 for technical assistance and research and development

to help water and wastewater treatment facilities achieve energy efficiency, including through the deployment of alternative energy sources, as appropriate. The Department is encouraged to support innovation in water technologies that will incentivize technology developments for the blue economy.

The Committee notes that industrial drying processes consume approximately 10 percent of the process energy used in the manufacturing sector. Within available funds, the recommendation provides \$10,000,000 for the issuance of a competitive solicitation for university and industry-led teams to improve the efficiency of industrial drying processes.

Within available funds, the recommendation provides not less than \$10,000,000 for the Lab-Embedded Entrepreneurship Program to advance the entrepreneurial development of clean energy innovations.

Within available funds, the recommendation provides up to \$5,000,000 to support research and development activities to test water reuse technologies in chips manufacturing specifically targeting high-yield manufacturing regions facing water scarcity issues.

The Committee directs EERE to coordinate research efforts on industrial emissions with FECM and to partner with an institution of higher learning to conduct research on air emissions from energy-intensive manufacturing facilities, such as cement facilities. The research shall focus on the combustion and energy recovery of non-traditional fuels, such as biomass, wood, pulp and paper, agricultural waste, plastics, and municipal waste. The Committee expects the program to collect data to better analyze calorific and heating values; emissions data for lifecycles of the fuel; fuel collection, processing, and supply efforts; and any regulatory barriers. The Committee directs the Department to provide not later than 90 days after enactment of this Act a briefing on the status of its data collection efforts.

The Committee notes the Energy-Water Desalination Hub has been fully funded through fiscal year 2024 and does not require additional funding in this Act.

Advanced Materials and Manufacturing Technologies.—Within available funds, the recommendation provides \$25,000,000 for the Manufacturing Demonstration Facility (MDF) and the Carbon Fiber Technology Facility.

Within available funds, the recommendation provides \$50,000,000 for Critical Materials, including the Critical Materials Institute and additional research, development, and demonstration activities for efficient material production and recycling, as well as production of alternatives.

The recommendation provides \$60,000,000 for Energy Technology Manufacturing.

Within available funds, the recommendation provides \$10,000,000 for the development of advanced tooling for lightweight automotive components. The Department is directed to further foster the partnership between the MDF, universities, and industry in the Great Lakes region for economic growth and technology innovation, thereby accelerating technology deployment and increasing the competitiveness of U.S. manufacturing industries.

Within available funds, the recommendation provides \$5,000,000 to develop a framework enhancing the utilization of additive manufacturing technologies to rapidly and sustainably manufacture largescale structures. The Department is encouraged to partner with industry experienced in the industrialization of additive manufacturing of structural components in carrying out this research.

Within available funds, the recommendation provides \$5,000,000 for the issuance of a competitive solicitation for industry-led teams to lessen the dependence on using foreign suppliers of films, reduce the energy transportation costs of using foreign-made films, and develop critical domestic manufacturing capabilities to produce nanolayered capacitor film and film manufacturing capabilities.

Within available funds, the recommendation provides \$5,000,000 for advanced manufacturing of large offshore wind blades.

Within available funds, the recommendation provides up to \$20,000,000 to continue development of additive manufacturing involving nanocellulose feedstock materials made from forest products. This work shall be conducted in partnership with the MDF to leverage expertise and capabilities for large scale additive manufacturing.

Building Technologies.—The recommendation provides \$55,000,000 for Commercial Building Integration, \$45,000,000 for Residential Buildings Integration, and \$40,000,000 for Equipment and Building Standards.

The recommendation provides \$10,000,000 for Building Energy Codes to meet statutory obligations.

The Committee recommends not less than \$25,000,000 for research, development, demonstration, and commercial application activities related to advanced solid-state lighting technology development. These activities shall include research considering the intersection of solid-state lighting efficiency and human health and new market deployment opportunities. In accordance with the Energy Policy Act of 2005, the Department is encouraged to work in coordination with the industry alliance that was established as part of the Act.

The Department is encouraged to ensure its support of technical assistance and workforce development activities is reaching small energy efficiency businesses that have had difficulties accessing federal support.

The Committee urges the Department to support, to the extent practicable, research and development to advance the effectiveness of American-made insulation and weatherization materials used in the construction of residential homes and commercial buildings to improve building envelope integrity and energy efficiency.

The Department is encouraged to advance research that supports building upgrades and energy efficiency retrofits of homes. This work may include partnerships with cities, states, affordable housing entities, utilities, manufacturers, and others to spur innovative approaches and dramatically drive investment in energy upgrades of homes. In addition, these efforts may include work in grid-integrated efficient buildings and inclusion of smart grid systems, demand flexibility, as well as new initiatives in workforce training to ensure the technology and research findings reach practitioners. Programs and investments may promote solutions that consider consumer interests and are therefore more likely to gain wide-

spread uptake. The Department is encouraged to support research, demonstration, and field testing of new technology and focusing on facilitating widespread deployment and dissemination of information and best practices through direct engagement with builders, the construction trades, equipment manufacturers, smart grid technology and systems suppliers, integrators, and state and local governments and other market transformation activities.

The Department is encouraged to continue to explore research and development that can advance future natural gas, renewable natural gas, propane gas, and renewable propane gas systems and appliances, including hybrid technologies and controls, to meet consumer demand for high efficiency and environmentally friendly products. The Department is encouraged to continue research, development, and market transformation programs on energy efficiency and demand management efforts related to the direct use of natural gas and propane gas in residential applications, including gas heat pump heating with power generation and water heating, on-site combined heat and power, and gas appliance venting, and on site (micro) combined heat and power including a cooling integration with renewables.

The Committee recognizes the mission of the Department to advance research to improve energy efficiency in industrial buildings and directs the Department to support collaborative projects with the Department of Agriculture's Agricultural Research Service (ARS) to improve the energy efficiency in controlled environmental agriculture (CEA). The Committee encourages the Department, in collaboration with the ARS, to investigate and evaluate use of thin films to prevent emissions, improve energy efficiency, and maintain target temperatures and light levels.

The Committee is encouraged by the potential of ground source heat pumps to help cost-effectively reduce building energy consumption, reduce emissions, and increase resiliency in the building sector. The Committee encourages the Buildings Technologies Office, in coordination with the Geothermal Technologies Office, to consider ground source heat pumps into its building efficiency technologies initiatives and funding opportunities. The Committee directs the Department to provide a briefing to the Committee not later than 90 days after enactment of this Act regarding steps it is taking to increase the use of this cost-saving technology.

STATE AND COMMUNITY ENERGY PROGRAMS

Within State and Community Energy Programs, the Department is encouraged to provide technical assistance for energy efficiency and resiliency retrofits to public buildings, including schools, hospitals, and community centers.

The Department is encouraged to coordinate activities to convene municipal governments, provide robust and tailored technical assistance to municipal governments, and provide funding and support to municipal governments or national and local partner organizations to implement best practices to advance energy efficiency adoption, building and vehicle electrification, grid modernization, distributed electricity generation, and workforce development at the local level. The Department is encouraged to include work with organizations that convene and support municipal governments.

The Committee recognizes the importance of providing funds to states, local governments, and tribes in a timely manner to avoid any undue delay of services to eligible low-income households. Therefore, the Department is directed to obligate funds expeditiously to grantees.

Weatherization.—The Department is encouraged to work collaboratively with the Building Technologies Office to develop a unified approach to residential workforce training and standardized residential energy efficiency upgrade packages.

MANUFACTURING AND ENERGY SUPPLY CHAINS

The Committee supports the continued operation of the university-based Industrial Assessment Centers (IAC), including new assessments with small and medium-sized manufacturers. The Committee encourages the Department to ensure the existing IACs also will work with other assessment centers at community colleges, technical schools, and workforce training programs.

The Committee recognizes the importance of permanent rare earth magnets in defense applications, energy technologies, and other commercial products. As the Office of Manufacturing and Energy Supply Chains (MESC) fulfills its responsibilities related to supporting the manufacturing capacity for advanced energy projects, the Committee encourages MESC to demonstrate support for those projects that onshore the domestic supply chain for these magnets.

The Committee notes the Department's previous awards focused on lithium-ion based battery chemistries. The Committee believes the Department should also seek to accelerate the deployment of domestic battery manufacturing for alternatives to lithium-ion chemistries in areas such as stationary, grid, and other battery energy storage end-use applications. The Department is encouraged to craft programmatic advanced battery solicitations focused on a broad spectrum of non-lithium-ion battery chemistries for these other application areas including grid-scale batteries.

The Committee directs the Department to support battery materials processing pilot projects, including projects that focus on battery technology, safety, costs, and efficiency as well as manufacturing processes and scale, seeking to overcome market barriers and commercialize next-generation EV battery technology. Furthermore, not later than 180 days after enactment of this Act, the Department shall brief the Committee regarding ways that battery materials processing grants are being utilized, or planned to be utilized, to support domestic vehicle battery manufacturing.

FEDERAL ENERGY MANAGEMENT PROGRAM

The recommendation provides up to \$2,000,000 for workforce development and the Performance Based Contract National Resource Initiative.

CORPORATE SUPPORT

Program Direction.—The recommendation provides not less than \$22,000,000 for the Office of State and Community Energy Programs, not less than \$1,000,000 for the Office of Manufacturing and Energy Supply Chains, not less than \$14,000,000 for the Fed-

eral Energy Management Program, and not less than \$180,000,000 for the Office of Energy Efficiency and Renewable Energy.

CYBERSECURITY, ENERGY SECURITY, AND EMERGENCY RESPONSE

Appropriation, 2023	\$200,000,000
Budget estimate, 2024	245,475,000
Recommended, 2024	200,000,000
Comparison:	
Appropriation, 2023	---
Budget estimate, 2024	- 45,475,000

The Office of Cybersecurity, Energy Security, and Emergency Response (CESER) leads efforts to secure the nation’s energy infrastructure against all hazards, reduce the risks of and impacts from cyber events and other disruptive events, and assist with restoration activities. A reliable and resilient power grid is critical to the nation’s economic competitiveness and leadership.

The Department is directed to include an itemization of funding levels below the control point in future budget submissions.

In light of documented cyber targeting of utilities, including by state actors, the Committee encourages the Department to incorporate pilot programs with energy industry asset owners and operators able to demonstrate active defense cybersecurity protection.

Risk Management Technology and Tools.—The Committee supports consequence-driven cyber-informed engineering and efforts to enable security by design through execution of the national cyber-informed engineering strategy.

The recommendation includes no funding to establish the Energy Cybersecurity Center of Excellence. The Committee strongly supports efforts to ensure that cybersecurity is integrated into the designs of energy delivery systems but does not support the proposed Center of Excellence model to achieve those results. The Committee directs CESER to provide a briefing on its ongoing activities to integrate cybersecurity into the designs of energy delivery systems, what prevents CESER from achieving these results, and how CESER can address any gaps within its ongoing programs.

The recommendation provides up to \$5,000,000 for university-based research and development of scalable cyber-physical platforms for resilient and secure electric power systems that are flexible, modular, self-healing, and autonomous. This activity should be conducted in coordination with the Office of Electricity.

The recommendation includes not less than \$5,000,000 to continue the establishment of a network of university-based, regional energy cybersecurity centers. The centers should address inter-related research and development challenges of cybersecurity and critical energy infrastructure and develop a trained, globally competitive workforce. The centers should be distributed regionally across the country to leverage regional utilities, national laboratories, and regulatory bodies and take into account the distinctive characteristics of each region’s electricity system, network of oil and gas infrastructure, and workforce expertise. The Committee directs CESER to lead these activities in coordination with the Office of Electricity and EERE.

The recommendation provides not less than \$4,000,000 to conduct a demonstration program of innovative technologies, such as

technologies for monitoring vegetation management, to improve grid resiliency from wildfires.

The recommendation provides \$5,000,000 to enhance quantum entanglement networking research and development at a quantum-ready municipal utility to research and demonstrate quantum-protected network capability for securing communications between energy systems, to include microgrid communication from a control center to a microgrid and internal communications within the microgrid, the capability for electric grid resiliency for reuse at the Department's electric grid facilities, and to protect electric grid Supervisory Control and Data Acquisition (SCADA).

The Committee recommends \$15,000,000 to support a regional pilot to foster partnerships between national laboratories, universities, electricity sector utilities, and State and local government entities to identify and mitigate the prevalent and constantly evolving national security threats to regional infrastructure.

Response and Restoration.—The Committee supports the Energy Threat Analysis Center (ETAC) concept and previous planning efforts for building out the ETAC pilot. However, the Committee is concerned the Department has been moving forward on long-term decisions without appropriately analyzing or communicating future funding requirements. The Committee directs the Department to provide not later than 15 days after enactment of this Act and prior to the issuance of any funding for ETAC a briefing on its plans to fully implement ETAC. The briefing shall include a multi-year program plan that provides cost estimate information by fiscal year on ETAC site selection and alternative site analyses, staffing costs, operating costs, real estate and facility costs, and any shared costs that are expected from other offices at the Department of Energy or other agencies in the federal government.

Preparedness, Policy, and Risk Analysis.—The Committee directs the Department to establish partnerships between national labs, public universities, and private industry to develop and implement a semiconductor industry workforce cybersecurity curriculum.

ELECTRICITY

Appropriation, 2023	\$350,000,000
Budget estimate, 2024	297,475,000
Recommended, 2024	315,600,000
Comparison:	
Appropriation, 2023	– 34,400,000
Budget estimate, 2024	+18,125,000

The Electricity account supports activities of the Office of Electricity and the Grid Deployment Office. The Office of Electricity (OE) leads efforts in developing new technologies to strengthen, transform, and improve electricity delivery infrastructure so all consumers have equitable access to resilient, secure, and clean sources of electricity. The Grid Deployment Office (GDO) focuses on the development of new and upgraded high-capacity electric transmission lines nationwide and deploying transmission and distribution technologies to improve the resilience of the nation's electric infrastructure.

The Department is directed to include an itemization of funding levels below the control point in future budget submissions.

GRID CONTROLS AND COMMUNICATIONS

Transmission Reliability and Resilience.—The recommendation includes \$2,500,000 to support university-based research partnerships to develop and deploy advanced data analytics and predictive models that incorporate human operator behavior to better understand, predict, prevent, and mitigate cascading failures in power grids.

Energy Delivery Grid Operations Technology.—The Committee supports the budget request efforts to develop a national platform to host the data and models necessary to deliver public-private analytics of grid reliability impact of the clean energy transition.

The recommendation includes up to \$2,500,000 to support research in silicon carbide and gallium nitride power electronics.

Resilient Distribution Systems.—The Department is directed to continue efforts to support the integration of sensors into the nation's electric distribution systems, fundamental research and field validation of microgrid controllers and systems, and transactive energy concepts, including studies and evaluations of energy usage behavior in response to price signals. The Committee places a high priority on addressing the challenges facing the electric power grid by advancing the development of innovative technologies, tools, and techniques to modernize the distribution portion of the electricity delivery system. The Department is encouraged to work with national laboratories and industry to advance best practices to technology development across the country. In addition, the Department is directed to evaluate the ability of emerging fuel technologies and currently available distributed fuels, such as propane-fueled microgrids, to be paired with renewable technologies.

The recommendation provides up to \$2,500,000 to evaluate and identify a standard approach to modeling distributed energy resources.

The recommendation includes \$10,000,000 to support the COMMANDER (Coordinated Management of Microgrids and Networked Distributed Energy Resources) National Test Bed to support foundational research for managing electric distribution systems equipped with diverse distributed energy resources and support the North American Energy Resilience Model.

The Committee supports the Department in developing and demonstrating digitalization technologies and solutions to help communities increase the resiliency of their infrastructure, enhance safety, and improve accessibility.

Cyber Resilient and Secure Utility Communications Networks.—The recommendation includes \$10,000,000 for the final year of the DarkNet project.

The Department, in coordination with CESER, is encouraged to support university-based research and development of scalable cyber-physical platforms for resilient and secure electric power systems that are flexible, modular, self-healing, and autonomous.

GRID HARDWARE, COMPONENTS, AND SYSTEMS

Energy Storage.—The recommendation includes \$4,800,000 for operations of the Grid Storage Launchpad.

Transformer Resilience and Advanced Components.—The Committee supports the Grid Research Integration and Demonstration Center.

GRID DEPLOYMENT

The Department is encouraged to provide public utility commissions and state energy offices with technical assistance for understanding distribution planning, interconnection, and modeling of distributed energy sources.

The Committee recognizes the Department’s work on transmission facilitation and efforts to engage with stakeholders to ease the process of building transmission. The Department is encouraged to continue supporting high voltage transmission activities and establishing the Transmission Facilitation Program.

The Department is directed to coordinate with states, tribes, and federal permitting agencies to help facilitate the siting and permitting of interstate and interregional high-voltage transmission lines. The Department is also directed to establish a process for the designation of National Interest Electric Transmission Corridors on a route-specific, applicant-driven basis. The Department is encouraged to work with the Federal Energy Regulatory Commission to establish coordinated procedures for information gathering, pre-filing, and application processes to expedite reviews and approvals pursuant to this authority.

Within available funds for Grid Technical Assistance, the Committee directs the Department to provide technical assistance and guidance for state Public Utility Commissions and Regional Transmission Organizations to model operating behaviors and develop advanced designs of long duration energy storage resources on the grid.

The Department is directed to provide to the Committee a briefing on its efforts in Puerto Rico, including outreach efforts targeting low-income households and households with people with disabilities and any barriers to further outreach efforts.

NUCLEAR ENERGY

Appropriation, 2023	\$1,473,000,000
Budget estimate, 2024	1,562,620,000
Recommended, 2024	1,783,000,000
Comparison:	
Appropriation, 2023	+310,000,000
Budget estimate, 2024	+220,380,000

A productive energy sector contains a mix of energy types including nuclear energy. Nuclear power generates approximately one-fifth of the nation’s electricity and continues to be an important emissions-free energy source. The Department’s Nuclear Energy (NE) program invests in research, development, and demonstration activities that develop the next generation of clean and safe reactors, further improve the safety and economic viability of the current reactor fleet, and contribute to the nation’s long-term leadership in the global nuclear power industry.

Nuclear Energy University Program (NEUP).—Since 2009, the Department has allocated up to 20 percent of funds appropriated to Nuclear Energy research and development programs to fund university-led R&D and university infrastructure projects through an

open, competitive solicitation process using formally certified peer reviewers. The recommendation continues to include a separate control point to fund NEUP and other crosscutting program responsibilities, including Small Business Innovation Research (SBIR), Small Business Technology Transfer (STTR), and Technology Commercialization Fund (TCF), in order to provide greater transparency and flexibility for this program. The Department is directed to provide to the Committee prior to the obligation of these funds a detailed spending and execution plan for NEUP activities. The Department is directed to provide to the Committee not later 90 days after enactment of this Act and quarterly thereafter briefings on the implementation of NEUP. The Committee notes it has yet to receive a detailed report on university reactor refurbishment and the potential need to upgrade or build additional university reactors required in the fiscal year 2023 Act. As in previous years, no funds are provided for the planning and construction of new university reactors.

Within available funds for NEUP, SBIR/STTR, and TCF, the recommendation provides \$6,630,000 for the University Nuclear Leadership Program, previously funded as the Integrated University Program.

Within available funds for NEUP, SBIR/STTR, and TCF, the recommendation provides \$12,000,000 for university infrastructure including revitalization of existing nuclear research infrastructure.

Within available funds for NEUP, SBIR/STTR, and TCF, the recommendation provides \$20,222,000 for University Fuel Services, previously funded as Research Reactor Infrastructure.

Within available funds for NEUP, SBIR/STTR and TCF, the Department is encouraged to consider university-led, convergent advanced nuclear manufacturing consortiums in future competitive funding opportunities.

Advanced Nuclear Licensing.—The Committee recommends up to \$5,000,000 for the Advanced Nuclear Energy Licensing Cost-Share Grant Program as authorized under 42 U.S.C. 16280 for technology diversity, including spent nuclear fuel reprocessing.

NUCLEAR ENERGY ENABLING TECHNOLOGIES

Crosscutting Technology Development.—The recommendation provides \$16,000,000 for integrated energy systems.

Nuclear Science User Facilities.—The recommendation includes not less than \$12,000,000 for computational support.

FUEL CYCLE RESEARCH AND DEVELOPMENT

The Committee is still awaiting two reports from the Department. The first was required by section 2001(b)(2) of the Energy Act of 2020 and the second was required in the fiscal year 2023 Act on the Department's plan to support the first core loads needed for the Advanced Reactor Demonstration Program awardees. The Department is directed to provide to the Committee not later than 30 days after enactment of this Act both reports.

Advanced Nuclear Fuel Availability.—The Committee strongly supports the Department's effort to ensure domestic low-enriched uranium (LEU) production capabilities and provides \$2,556,000,000 to support domestic low-enriched uranium capabilities and the availability of high-assay low-enriched uranium (HALEU). Funding

supports small quantities of HALEU in the short term and supports the transition of these activities to the private sector for commercial HALEU production and domestic supply chain capabilities for the long term.

The recommendation provides \$2,400,000,000 derived from unobligated Civil Nuclear Credit funds for LEU and HALEU availability. This funding includes \$800,000,000 in each of fiscal years 2024, 2025, 2026, and requires specific congressional authorization prior to availability of funds.

In addition, the recommendation includes \$156,000,000 to advance the availability of high-assay low-enriched uranium and other advanced nuclear fuels, consistent with section 2001 of the Energy Act of 2020. Within that amount \$2,000,000 is for Mining, Shipping, and Transportation; \$120,000,000 is for Advanced Nuclear Fuel Availability; and not less than \$34,000,000 is provided within Material Recovery and Waste Form Development.

The Department is directed to conduct HALEU activities in a manner that will encourage, rather than discourage, the private sector commercialization of HALEU production. The Department is further directed to disburse these funds on a competitive basis and directs the Department to ensure there are two suppliers of HALEU to meet anticipated commercial demand.

The Department is encouraged to make available a sufficient supply of early allocations of HALEU to the first industry participants that conduct a full system-capacity test demonstration.

GAO Review of the Acquisition Strategy for High-Assay, Low-Enriched Uranium (HALEU).—The Energy Act of 2020 directed the Secretary of Energy to establish and carry out, through the Department's Office of Nuclear Energy, a HALEU Availability Program and a HALEU Consortium to help the Department support the availability of HALEU. Congress further provided \$700,000,000 million in funding in the Inflation Reduction Act of 2022 to support the program and consortium. The Department of Energy also supports an Advanced Nuclear Fuel Availability subprogram to provide limited quantities of HALEU in the short term while working to establish a long-term commercial U.S. HALEU production and supply chain capability. The Department has sought significant budget increases for this subprogram in recent years.

The Government Accountability Office (GAO) has previously raised concerns about numerous aspects of the Department's uranium management strategies and efforts. The Committee is concerned about the absence of a clear and detailed plan from the Department for how it intends to utilize funds for HALEU development. In particular, the Committee is concerned with some of the Department's underlying assumptions and the credibility of its estimates of current and future HALEU demands from industry.

The Committee directs the Comptroller General to conduct a comprehensive evaluation of the Department's strategy and plans for the development of HALEU. Such an evaluation should assess—(1) the Department's estimates of future HALEU demands, for both civilian and national security needs, and any potential limitations in those forecasts; (2) the Department's estimates of the future HALEU availability under actions being taken or planned by the Department; (3) a description and assessment of all departmental projects and activities undertaken to date to facilitate fu-

ture HALEU supply for commercial and national security needs; (4) a schedule for the future execution of current and planned projects and activities supporting HALEU development and supply; (5) data on the obligation and expenditure of funding to facilitate development of HALEU supply to date; and (6) estimates of any future funding the Department has identified as necessary to support current or planned HALEU development efforts and the basis for those estimates.

GAO is directed to brief the Committee on its preliminary findings not later than 180 days after enactment of this Act, with the issuance of a written report to follow at a date agreed to at the time of the briefing.

Thorium based fuel.—The Department is encouraged to consider supporting activities related to the testing and qualification of a next-generation thorium-HALEU based fuel suitable for existing and new reactors.

Material Recovery and Waste Form Development.—The recommendation provides not less than \$27,000,000 for EBR-II Processing for HALEU and \$7,000,000 to continue activities related to the ZIRCEX process.

The U.S. has approximately 86,000 metric tons of spent nuclear fuel from commercial reactors stored at 75 U.S. sites and this amount continues to grow annually. Currently, countries including France, United Kingdom, Japan, Russia, and China reprocess their nuclear waste. The Committee supports the Department's ongoing reprocessing efforts and believes greater progress can be made. The Committee recommends \$10,000,000 to implement a new competitive, cost-shared program for reprocessing spent nuclear fuel. Award funding may be used for (1) conceptual design; (2) technical studies; and (3) site studies. The primary goal of this new program is to focus government and industry resources on reprocessing capabilities with commercial application by 2033. This program is not intended to stop any ongoing activities funded in this or other programs.

Accident Tolerant Fuels (ATF).—The Committee continues to place a high priority on this program and urges the Department to maintain focus on achieving results in these efforts. The recommendation provides not less than \$22,000,000 for further development of silicon carbide ceramic matrix composite fuel cladding for light water reactors. The Committee remains concerned that funding for the industry-led portions of the ATF program is not being obligated by the Department in a timely manner. The Department is reminded reallocation or reprogramming of funds requires congressional approval. The Department is directed to align its contracts with the three industry-led teams with the funding provided by the Committee. Finally, the Department is directed to provide to the Committee not later than 60 days after enactment of this Act a table summarizing the allocation of these funds.

Triso Fuel and Graphite Qualification.—The Committee provides \$35,000,000 to continue TRISO fuel and graphite qualification and maintain a base research and development program in support of expanding industry needs for advanced fuels.

Advanced Generation 4 reactors that use HALEU fuel may require different waste management processes than today's fuel. The

Department is encouraged to assess what actions are needed to address used fuel from HALEU based fuels, including TRISO fuel.

Fuel Cycle Laboratory R&D.—The recommendation provides up to \$15,000,000 for an advanced metallic fuels program.

The Department is directed to continue development of an integrated strategy between the Office of Nuclear Energy and the Office of Environmental Management to establish a road-ready, dry storage packaging configuration capability for Department-owned spent fuel. The Department, including participation from the Office of Nuclear Energy and the Office of Environmental Management, is directed to provide to the Committee not later than 60 days after enactment of this Act a briefing on an implementation strategy for these activities.

REACTOR CONCEPTS RESEARCH, DEVELOPMENT, AND DEMONSTRATION

Advanced Small Modular Reactor RD&D.—The recommendation includes \$1,317,000,000 for ongoing demonstration activities, including \$399,000,000 in each of fiscal years 2024, 2025 and 2026 derived from unobligated Civil Nuclear Credit funds.

The Committee also supports assistance for U.S. nuclear technologies that are ready for near-term deployment and provides an additional \$50,000,000 to be awarded competitively with a 50/50 cost share to support design, licensing, supplier development, and site preparation of a grid-scale Generation 3+ reactor design that can be deployed no later than 2030. The Department is directed to award this funding not later than 90 days after enactment of this Act to support rapid domestic deployment of small modular reactors in the near term and supplier development to fabricate nuclear components for both U.S. and export markets.

Advanced Reactor Technologies.—The recommendation provides not less than \$20,000,000 for MARVEL.

The recommendation provides up to \$10,000,000 for the fast reactor program.

ADVANCED REACTORS DEMONSTRATION PROGRAM

The Committee notes the importance of the deployment of advanced reactors to the nation's ability to regain its leadership in nuclear energy and the contribution of nuclear energy to meeting climate goals. The Committee is encouraged by the Department's pace of activities in establishing the Advanced Reactors Demonstration Program (ARDP). This program will help facilitate the accelerated development and deployment of advanced reactors.

National Reactor Innovation Center.—The recommendation supports capital design and construction activities for demonstration reactor test bed preparation at Idaho National Laboratory supporting reactor demonstration activities. The Department is directed to provide to the Committee not later than 90 days after enactment of this Act a briefing on the proposed activities, timelines for these activities, and expected out-year costs of the National Reactor Innovation Center.

Risk Reduction for Future Demonstrations.—The recommendation includes \$130,000,000 for the Risk Reduction program. The Department is directed to provide to the Committee not later than 90 days after enactment of this Act a briefing on the impacts of

cost escalations on the ARDP projects, including an assessment of any additional resources needed to successfully complete projects.

FOSSIL ENERGY AND CARBON MANAGEMENT

Appropriation, 2023	\$890,000,000
Budget estimate, 2024	905,475,000
Recommended, 2024	857,904,000
Comparison:	
Appropriation, 2023	– 32,096,000
Budget estimate, 2024	– 47,571,000

The Fossil Energy and Carbon Management (FECM) program funds research, development, and demonstration activities to improve existing fossil energy technologies, develop solutions for the capture, storage, utilization, and removal of carbon across numerous sectors, including the industrial sector, and rebuild a U.S. critical minerals supply chain.

The Committee notes that fossil energy resources generate approximately 60 percent of the nation’s electricity and will continue to play an essential role in maintaining a resilient electric grid. The Committee rejects the budget request’s continued shift away from fossil combustion-centric activities and directs the Department to support research, development, and demonstration activities that includes all fossil resources, including coal, when developing future funding opportunity announcements and implementing the goals outlined in FECM’s current strategic vision document. The Committee directs FECM to provide a briefing on its efforts to comply with this direction not later than 180 days after enactment of this Act.

Consistent with direction provided in previous fiscal years, the Committee does not support the closure of any National Energy Technology Laboratory (NETL) site and provides no funds to plan, develop, implement, or pursue the consolidation or closure of any of the NETL sites.

Mickey Leland Energy Fellowship.—The Committee supports the Mickey Leland Energy Fellowship and directs the Department to produce a plan to expand the program to include post-doctoral research positions within the program.

Solid Oxide Fuel Cell Systems & Hydrogen.—The recommendation provides not less than \$112,500,000 for the research, development, and demonstration of solid oxide fuel cell systems and hydrogen production, transport, storage, and use systems.

University Training and Research.—The recommendation does not include funding in support of the Administration’s Justice40 Initiative.

CARBON MANAGEMENT TECHNOLOGIES

The Committee recommends funding for the Department’s National Carbon Capture Center consistent with the cooperative agreement.

Carbon Capture.—The Committee provides not less than \$15,000,000 for research and optimization of carbon capture technologies at industrial facilities and not less than \$20,000,000 for research and optimization of carbon capture technologies for natural gas and coal power systems.

The recommendation provides up to \$60,000,000 to support front-end engineering and design studies, including for the development of a first-of-its-kind carbon capture project at an existing natural gas combined cycle plant. The Department is encouraged to prioritize entities that are primarily engaged in the generation of electricity from natural gas in competitive power markets.

The Department is encouraged to support a chemical looping project using natural gas or coal to demonstrate the technical, operational, and economic advantages of looping for clean hydrogen production and carbon capture, including its use in industrial applications.

The fiscal year 2022 Act directed the Department to provide a report on its efforts to increase public-private partnerships and research program opportunities at universities. The Committee is still awaiting this report and directs the Department to provide it to the Committees on Appropriations of both Houses of Congress not later than 30 days after enactment of this Act.

The Department is directed to support research and development activities on mobile engine exhaust carbon capture.

Carbon Dioxide Removal.—The Department is directed to keep the Committee apprised of the Department's efforts to carry out the carbon dioxide removal authorities granted in the Energy Act of 2020.

Carbon Utilization.—The Committee notes the unrealized opportunity for carbon use and reuse to encourage the avoidance and removal of emissions, generate valuable products, and create revenue streams and jobs. The Department is directed to significantly increase investment in the Carbon Utilization program, particularly in research, development, and demonstration activities. The recommendation continues to support carbon utilization research, development, and demonstration activities to advance valuable and innovative uses of captured carbon, including conversion to products such as chemicals, plastics, building materials, and fuels.

The Department is encouraged to research and develop carbon mineralization as a utilization pathway, with specific research activities to include fundamental research on geochemistry and rock physics. The Department is also encouraged to coordinate with the General Services Administration and the Department of Transportation to support the development of lifecycle assessment frameworks for the procurement of low-carbon construction material.

The Committee is encouraged by the advancements in technologies converting coal into carbon-based building materials, prioritizing approaches that ensure that the processing, handling, production, and use of the building materials are safe in terms of trace metal removal from the carbon feedstock. The current demand for building materials continues to rise. The Committee directs the Department to partner with private industry to research and develop the use of carbon building products produced from coal, including carbon foam.

The Committee supports valuable and innovative uses of captured carbon, including the conversion of carbon dioxide into higher value products such as chemicals, plastics, building materials, and curing for cement among other useful productions.

Carbon Storage.—The recommendation provides not less than \$40,000,000 for CarbonSAFE and not less than \$20,000,000 for the Regional Carbon Sequestration Partnerships.

The Department is directed to support advanced storage research and development activities, including risk integration tools and storage integrity and assurance. The Department is also directed to begin characterization of offshore storage sites and coordinate with the Department of the Interior to identify appropriate tools for conducting offshore CO₂ storage.

The Committee directs the Department to partner with institutions of higher education in a joint effort to develop comprehensive modeling and experimental research of hydrogen transport and leak detection in U.S. natural gas pipelines across a range of blend ratios and pipeline operational pressures.

Hydrogen with Carbon Management.—The agreement provides not less than \$35,000,000 for Advanced Turbines to carry out research, development, and demonstration activities to develop near-zero-emission advanced turbines technologies. The Department is encouraged to support research and development activities to test and validate components and their performance as an integrated system, working cooperatively with industry, universities, and other appropriate parties.

Supercritical Transformational Electric Power (STEP) Generation.—The Committee supports competitively awarded research and development activities, coordinated with the Offices of Nuclear Energy and Energy Efficiency and Renewable Energy, to advance the use of supercritical power cycles.

RESOURCE TECHNOLOGIES AND SUSTAINABILITY

Advanced Remediation Technologies.—The recommendation provides \$25,000,000 for university research and field investigations in the Gulf of Mexico to confirm the nature, regional context, and hydrocarbon system behavior of gas hydrate deposits.

The recommendation provides \$19,000,000 for Unconventional Field Test Sites. The Department is directed to maintain robust efforts in enhanced recovery technologies.

The recommendation provides \$8,000,000 for the Risk Based Data Management System.

Within available funding, the Committee recommends \$5,000,000 for a competitive solicitation for research universities to advance innovative improvements in CO₂ enhanced recovery technologies and postproduction sequestration. These improvements shall include the application of new technologies, including artificial intelligence, machine learning, and improved stimulation practices and subsurface characterization, focused on reducing greenhouse gas emissions from oil and gas operations and maximizing recovery of existing oil in low permeability shale and sub-economic carbonate reservoirs. To improve environmental sustainability of oil and gas production, the Committee encourages DOE to advance technologies related to reduced water usage in oil and gas stimulation and production and increased efficiency and recovery of production operations.

The Committee notes the Department's continued investment in research and development on unconventional fossil energy technologies, including support for field laboratories. The Department

is encouraged to explore the rapid development of a prototype or prototypes of new technologies identified by the Department that use solid propellant fuel to generate gas and that drive hydraulic systems to shut off unwanted flows or blow outs of oil or gas from onshore or offshore wells in the shortest possible time with the highest possible reliability and efficiency. The Department is encouraged to ensure that this new technology is created, patented, built, and deployed by an American company or companies and to protect the confidentiality of the intellectual property and patents as applicable.

Methane Mitigation Technologies.—The Department is encouraged to support activities to develop and demonstrate an easily implementable, maintainable, and low-cost integrated methane monitoring platform. The Department is encouraged to accelerate development and deployment of high-temperature harsh-environment sensors, sensor packaging, and wireless sensor hardware for power generation. The Department is encouraged to collaborate with external stakeholders in making use of commercial assets to monitor methane emissions from satellites and other methane emissions detection technologies to isolate the source of emissions at the individual facility level and to explore technologies, including in coordination with public-private partnerships, that promote innovative approaches, such as detection technologies in support of reducing methane gas emissions.

The Department is directed to provide to the Committee not later than 180 days after enactment of this Act a report on the technical and economic potential, and potential ancillary impacts, of direct methane removal technologies and approaches.

The Committee supports ongoing efforts by private industry in technologies, advancements, and concepts to capture and utilize coal mine methane for beneficial use. The Committee directs the Department to support these efforts, including research and output from national labs focused on studies and modeling of carbon intensity associated with such methane under the Greenhouse Gas Regulated Emissions and Energy Use in Technologies model, and assessments to better utilize this fuel source.

Mineral Sustainability.—The Department is directed to focus its research and development efforts to develop and assess advanced separation technologies for the extraction and recovery of rare earth elements and other critical materials from coal and coal by-products. Further, the Department is directed to determine and mitigate any potential environmental or public health impacts that could arise from the recovery of rare earth elements from coal-based resources.

Within available funds, the Committee directs the Department to support research and development activities to develop and test advanced separation technologies and accelerate the advancement of commercially viable technologies for the recovery of rare earth elements and minerals from byproduct sources, including bauxite residue.

Within available funds, the Committee directs the Department to conduct research and development activities to support the development of an academia-industry partnership with a national lab to create a new domestic rare earth supply chain derived from the by-products of phosphate mining. This project will focus on the use of

high field magnetic separation of rare earth minerals and chemical separation techniques for radium.

The Committee recognizes the importance of permanent rare earth magnets in defense applications, energy technologies, and other commercial products. As FECM fulfills its responsibilities related to supporting an increase in the manufacturing capacity for advanced energy projects, the Committee encourages the Office to demonstrate support for those projects that onshore the domestic supply chain for these magnets.

The Committee directs the Department to support projects that will enable critical minerals to remain within the United States to be recycled and refined back to high-purity qualities and grades. When making funding awards, the Department is encouraged to include innovative, high performing, and flexible refining technologies beyond hydro- and pyro-metallurgical separation for separating and purifying critical minerals and rare earth elements to be used as raw materials throughout our domestic manufacturing supply chains.

The Committee understands the Department’s high demand for critical minerals and continued reliance on foreign sources for its critical mineral supply, including extraction and processing. The Committee recognizes that the Department’s demand for critical minerals, including Germanium and Gallium, is likely to increase in the coming decade concurrent with a rise in global demand. The Committee directs the Department to continue its support of technologies to domestically produce critical minerals.

The Committee directs EERE and FECM to jointly issue a competitive solicitation for research, development, and demonstration projects that combine both recycling technologies and rare earth element separation technologies.

NAVAL PETROLEUM AND OIL SHALE RESERVES

Appropriation, 2023	\$13,004,000
Budget estimate, 2024	13,010,000
Recommended, 2024	13,010,000
Comparison:	
Appropriation, 2023	+6,000
Budget estimate, 2024	---

The Naval Petroleum and Oil Shale Reserves continues work towards closing out remaining environmental restoration and remediation activities.

STRATEGIC PETROLEUM RESERVE

Appropriation, 2023	\$207,175,000
Budget estimate, 2024	280,969,000
Recommended, 2024	280,969,000
Comparison:	
Appropriation, 2023	+73,794,000
Budget estimate, 2024	---

The mission of the Strategic Petroleum Reserve is to store petroleum to reduce the adverse economic impact of a major petroleum supply interruption to the United States and to carry out obligations under the international energy program.

DOE's Office of Science laboratory user facilities, operations, and infrastructure. The Department is directed to provide to the Committee not later than 180 days after enactment of this Act a comprehensive feasibility and workforce trends study outlining the skilled technician workforce training requirements, programs, gaps, and investments necessary to establish a skilled technician training program within the Office of Science to support continued operations of laboratory user facilities and infrastructure.

NUCLEAR WASTE DISPOSAL

Appropriation, 2023	\$10,205,000
Budget estimate, 2024	12,040,000
Recommended, 2024	12,040,000
Comparison:	
Appropriation, 2023	+1,835,000
Budget estimate, 2024	---

The recommendation includes \$12,040,000 for Nuclear Waste Disposal for Nuclear Waste Fund (NWF) oversight activities.

The Department is directed to provide to the Committee not later than 90 days after enactment of this Act a briefing on anticipated future-year requirements for NWF oversight activities.

TECHNOLOGY TRANSITIONS

Appropriation, 2023	\$22,098,000
Budget estimate, 2024	56,550,000
Recommended, 2024	22,098,000
Comparison:	
Appropriation, 2023	---
Budget estimate, 2024	-34,452,000

The mission of the Office of Technology Transitions (OTT) is to expand the commercial and public impact of the research investments of the Department. OTT enhances the public return on investment in the Department's technology portfolio, including the national laboratories, through a suite of outcome-oriented activities that enable job creation and commercialization of technologies developed by the Department.

The recommendation provides \$5,000,000 to support the Energy Program for Innovation Clusters (EPIC) program.

The recommendation includes no funding for the Foundation for Energy Security and Innovation.

The Committee directs the Department to continue to utilize incubators when appropriate to assist the agency in its efforts.

The Department is encouraged to further promote technology transfer programs and activities that support the commercialization of technologies within the local and regional communities of the national laboratories.

CLEAN ENERGY DEMONSTRATIONS

Appropriation, 2023	\$89,000,000
Budget estimate, 2024	215,300,000
Recommended, 2024	35,000,000
Comparison:	
Appropriation, 2023	-54,000,000
Budget estimate, 2024	-180,300,000

The Office of Clean Energy Demonstrations (OCED) was established to accelerate the maturation of near- and mid-term clean en-

ergy technologies and systems with the goal of quicker commercial adoption and increased availability. This will be accomplished through a systematic approach that is informed by, and integrated with, existing clean energy innovation initiatives across the Department’s program and functional offices, sites, and national laboratories.

The recommendation only includes funding for Program Direction and provides no funding for new demonstrations. The Committee notes that more than \$21 billion has been provided to the Office of Clean Energy Demonstrations in the previous two fiscal years for demonstration activities. When awarding these funds, the Committee encourages the Department to consider technology demonstrations in high-emitting and historically difficult to abate sectors.

Within available funds for Program Direction, the recommendation includes \$10 million for Demonstration Planning and Analysis to support OCED’s continued efforts to develop improved oversight of project engineering, construction, and operations of demonstration projects. The Committee expects OCED to coordinate with the Department to ensure any project management oversight improvements are applicable to all Offices in the Department that support demonstration activities.

OCED is directed to coordinate with the Office of Science to determine the appropriate time to hand off program management and implementation activities of the Milestone-Based Development Program. The Committee expects this decision to be made not later than 180 days after enactment of this Act.

ADVANCED RESEARCH PROJECTS AGENCY—ENERGY

Appropriation, 2023	\$470,000,000
Budget estimate, 2024	650,200,000
Recommended, 2024	470,000,000
Comparison:	
Appropriation, 2023	---
Budget estimate, 2024	- 180,200,000

The Advanced Research Projects Agency—Energy (ARPA—E) supports research aimed at rapidly developing energy technologies whose development and commercialization are too risky to attract sufficient private sector investment but are capable of significantly changing the energy sector to address critical economic, environmental, and energy security challenges.

TITLE 17 INNOVATIVE TECHNOLOGY LOAN GUARANTEE PROGRAM

ADMINISTRATIVE EXPENSES

GROSS APPROPRIATION

Appropriation, 2023	\$66,206,000
Budget estimate, 2024	70,000,000
Recommended, 2024	70,000,000
Comparison:	
Appropriation, 2023	+3,794,000
Budget estimate, 2024	---

COMPARATIVE STATEMENT OF NEW BUDGET (OBLIGATIONAL) AUTHORITY FOR 2023
AND BUDGET REQUESTS AND AMOUNTS RECOMMENDED IN THE BILL FOR 2024
(Amounts in thousands)

	FY 2023 Enacted	FY 2024 Request	Bill	Bill vs. Enacted	Bill vs. Request
ENERGY PROGRAMS					
ENERGY EFFICIENCY AND RENEWABLE ENERGY					
Sustainable Transportation:					
Vehicle Technologies.....	455,000	526,942	400,000	-55,000	-126,942
Bioenergy Technologies.....	280,000	323,000	240,000	-40,000	-83,000
Hydrogen and Fuel Cell Technologies.....	170,000	163,075	138,000	-32,000	-25,075
Subtotal, Sustainable Transportation.....	905,000	1,013,017	778,000	-127,000	-235,017
Renewable Energy:					
Solar Energy Technologies.....	318,000	378,908	288,000	-30,000	-90,908
Wind Energy Technologies.....	132,000	385,000	113,000	-19,000	-272,000
Water Power Technologies.....	179,000	229,769	155,000	-24,000	-74,769
Geothermal Technologies.....	118,000	216,000	118,000	---	-98,000
Renewable Energy Grid Integration.....	45,000	59,066	---	-45,000	-59,066
Subtotal, Renewable Energy.....	792,000	1,268,743	674,000	-118,000	-594,743
Energy Efficiency:					
Advanced Manufacturing.....	450,000	---	---	-450,000	---
Industrial Efficiency & Decarbonization Office.....	---	394,245	235,000	+235,000	-159,245
Advanced Materials & Manufacturing Technologies Office.....	---	241,497	200,000	+200,000	-41,497
Building Technologies.....	332,000	347,841	255,000	-77,000	-92,841
Subtotal, Energy Efficiency.....	782,000	983,583	690,000	-92,000	-293,583

COMPARATIVE STATEMENT OF NEW BUDGET (OBLIGATIONAL) AUTHORITY FOR 2023
AND BUDGET REQUESTS AND AMOUNTS RECOMMENDED IN THE BILL FOR 2024
(Amounts in thousands)

	FY 2023 Enacted	FY 2024 Request	Bill	Bill vs. Enacted	Bill vs. Request

State and Community Energy Programs:					
Weatherization:					
Weatherization Assistance Program.....	326,000	---	238,000	-88,000	+238,000
Training and Technical Assistance.....	10,000	---	10,000	---	+10,000
Weatherization Readiness Fund.....	30,000	---	30,000	---	+30,000

Subtotal, Weatherization.....	366,000	---	278,000	-88,000	+278,000
State Energy Program.....	66,000	---	66,000	---	+66,000
Local Government Energy Program.....	12,000	---	---	-12,000	---
Energy Future Grants.....	27,000	---	---	-27,000	---

Subtotal, State and Community Energy Programs...	471,000	---	344,000	-127,000	+344,000
Manufacturing and Energy Supply Chains:					
Facility and Workforce Assistance.....	16,000	---	16,000	---	+16,000
Energy Sector Industrial Base Technical Assistance	2,000	---	2,000	---	+2,000

Subtotal, Manufacturing and Energy Supply Chains	18,000	---	18,000	---	+18,000
Federal Energy Management Program:					
Federal Energy Management.....	29,000	---	29,000	---	+29,000
Federal Energy Efficiency Fund.....	14,000	---	---	-14,000	---

Subtotal, Federal Energy Management Program.....	43,000	---	29,000	-14,000	+29,000
Corporate Support:					
Facilities and Infrastructure:					
National Renewable Energy Laboratory (NREL).....	160,000	185,391	160,000	---	-25,391

COMPARATIVE STATEMENT OF NEW BUDGET (OBLIGATIONAL) AUTHORITY FOR 2023
AND BUDGET REQUESTS AND AMOUNTS RECOMMENDED IN THE BILL FOR 2024
(Amounts in thousands)

	FY 2023 Enacted	FY 2024 Request	Bill	Bill vs. Enacted	Bill vs. Request
21-EE-001, Energy Materials Processing at Scale (EMAPS).....	45,000	57,000	57,000	+12,000	---
Establish New National Laboratory.....	---	35,000	---	---	-35,000
Subtotal, Facilities and Infrastructure.....	205,000	277,391	217,000	+12,000	-60,391
Program Direction	223,000	225,623	223,000	---	-2,623
Strategic Programs.....	21,000	57,759	21,000	---	-36,759
Subtotal, Corporate Support.....	449,000	560,773	461,000	+12,000	-99,773
Subtotal, Energy Efficiency and Renewable Energy..	3,460,000	3,826,116	2,994,000	-466,000	-832,116
TOTAL, ENERGY EFFICENCY AND RENEWABLE ENERGY.....	3,460,000	3,826,116	2,994,000	-466,000	-832,116
STATE AND COMMUNITY ENERGY PROGRAMS					
Weatherization:					
Weatherization Assistance Program.....	---	375,000	---	---	-375,000
Training and Technical Assistance.....	---	10,000	---	---	-10,000
Weatherization Readiness Fund.....	---	51,780	---	---	-51,780
Subtotal, Weatherization.....	---	436,780	---	---	-436,780
State Energy Program.....	---	75,000	---	---	-75,000
Local Government Energy Program.....	---	65,000	---	---	-65,000
Energy Future Grants.....	---	40,000	---	---	-40,000

COMPARATIVE STATEMENT OF NEW BUDGET (OBLIGATIONAL) AUTHORITY FOR 2023
AND BUDGET REQUESTS AND AMOUNTS RECOMMENDED IN THE BILL FOR 2024
(Amounts in thousands)

	FY 2023 Enacted	FY 2024 Request	Bill	Bill vs. Enacted	Bill vs. Request
Energy Burden Reduction Pilot.....	---	50,000	---	---	-50,000
Interagency Working Group.....	---	5,000	---	---	-5,000
Program Direction.....	---	33,220	---	---	-33,220
	=====	=====	=====	=====	=====
TOTAL, STATE AND COMMUNITY ENERGY PROGRAMS.....	---	705,000	---	---	-705,000
	=====	=====	=====	=====	=====
MANUFACTURING AND ENERGY SUPPLY CHAINS					
Facility and Workforce Assistance.....	---	15,490	---	---	-15,490
Global Clean Energy Manufacturing Initiative.....	---	75,000	---	---	-75,000
Defense Production Act.....	---	65,000	---	---	-65,000
Program Direction.....	---	24,000	---	---	-24,000
	=====	=====	=====	=====	=====
TOTAL, MANUFACTURING AND ENERGY SUPPLY CHAINS.....	---	179,490	---	---	-179,490
	=====	=====	=====	=====	=====
FEDERAL ENERGY MANAGEMENT PROGRAM					
Federal Energy Management.....	---	45,000	---	---	-45,000
Federal Energy Efficiency Fund.....	---	20,000	---	---	-20,000
Net-Zero Laboratory Initiative.....	---	---	---	---	---
Program Direction.....	---	17,200	---	---	-17,200
	=====	=====	=====	=====	=====
TOTAL, FEDERAL ENERGY MANAGEMENT PROGRAM.....	---	82,200	---	---	-82,200
	=====	=====	=====	=====	=====

COMPARATIVE STATEMENT OF NEW BUDGET (OBLIGATIONAL) AUTHORITY FOR 2023
AND BUDGET REQUESTS AND AMOUNTS RECOMMENDED IN THE BILL FOR 2024
(Amounts in thousands)

	FY 2023 Enacted	FY 2024 Request	Bill	Bill vs. Enacted	Bill vs. Request

CYBERSECURITY, ENERGY SECURITY, AND EMERGENCY RESPONSE					
Risk Management Technology and Tools.....	125,000	135,000	125,857	+857	-9,143
Response and Restoration.....	23,000	39,000	23,000	---	-16,000
Preparedness, Policy, and Risk Analysis.....	26,857	39,000	26,000	-857	-13,000
Program Direction.....	25,143	32,475	25,143	---	-7,332
	=====	=====	=====	=====	=====
TOTAL, CYBERSECURITY, ENERGY SECURITY, AND EMERGENCY RESPONSE.....	200,000	245,475	200,000	---	-45,475
	=====	=====	=====	=====	=====
ELECTRICITY					
Grid Controls and Communications:					
Transmission Reliability and Resilience.....	34,000	42,500	36,500	+2,500	-6,000
Energy Delivery Grid Operations Technology.....	31,000	30,000	32,500	+1,500	+2,500
Resilient Distribution Systems.....	55,000	47,300	37,500	-17,500	-9,800
Cyber Resilient and Secure Utility Communications Networks.....	15,000	15,000	15,000	---	---
	-----	-----	-----	-----	-----
Subtotal, Grid Controls and Communications.....	135,000	134,800	121,500	-13,500	-13,300

COMPARATIVE STATEMENT OF NEW BUDGET (OBLIGATIONAL) AUTHORITY FOR 2023
AND BUDGET REQUESTS AND AMOUNTS RECOMMENDED IN THE BILL FOR 2024
(Amounts in thousands)

	FY 2023 Enacted	FY 2024 Request	Bill	Bill vs. Enacted	Bill vs. Request

Grid Hardware, Components, and Systems:					
Energy Storage:					
Research.....	95,000	78,600	78,600	-16,400	---
Transformer Resilience and Advanced Components.....	27,500	21,700	23,000	-4,500	+1,300
Applied Grid Transformation Solutions.....	10,000	29,700	10,000	---	-19,700

Subtotal, Grid Hardware, Components, and Systems	132,500	130,000	111,600	-20,900	-18,400
Electricity Innovation and Transition.....	---	14,000	---	---	-14,000
Grid Deployment:					
Grid Planning and Development.....	16,000	---	16,000	---	+16,000
Grid Technical Assistance.....	25,000	---	25,000	---	+25,000
Wholesale Electricity Market Technical Assistance and Grants.....	16,500	---	16,500	---	+16,500
Interregional and Offshore Transmission Planning....	2,000	---	2,000	---	+2,000

Subtotal, Grid Deployment.....	59,500	---	59,500	---	+59,500
Program Direction.....	23,000	18,675	23,000	---	+4,325
	=====				
TOTAL, ELECTRICITY.....	350,000	297,475	315,600	-34,400	+18,125
	=====				

COMPARATIVE STATEMENT OF NEW BUDGET (OBLIGATIONAL) AUTHORITY FOR 2023
AND BUDGET REQUESTS AND AMOUNTS RECOMMENDED IN THE BILL FOR 2024
(Amounts in thousands)

	FY 2023 Enacted	FY 2024 Request	Bill	Bill vs. Enacted	Bill vs. Request

GRID DEPLOYMENT OFFICE					
Interregional and Offshore Transmission Planning.....	---	22,000	---	---	-22,000
Offshore Wind Planning and Development	---	8,000	---	---	-8,000
Grid Technical Assistance.....	---	26,500	---	---	-26,500
Wholesale Electricity Market Technical Assistance and Grants.....	---	19,000	---	---	-19,000
EV Grid Planning & Markets	---	5,000	---	---	-5,000
Territory, Tribal, & Rural Community Development.....	---	12,750	---	---	-12,750
Hydropower Incentives.....	---	250	---	---	-250
Program Direction.....	---	13,100	---	---	-13,100
	=====	=====	=====	=====	=====
TOTAL, GRID DEPLOYMENT OFFICE.....	---	106,600	---	---	-106,600
	=====	=====	=====	=====	=====
NUCLEAR ENERGY					
Nuclear Energy Enabling Technologies:					
Crosscutting Technology Development.....	32,000	32,778	32,778	+778	---
Joint Modeling and Simulation Program.....	28,500	28,500	28,500	---	---
Nuclear Science User Facilities.....	35,000	35,000	35,000	---	---
	-----	-----	-----	-----	-----
Subtotal, Nuclear Energy Enabling Technologies..	95,500	96,278	96,278	+778	---

COMPARATIVE STATEMENT OF NEW BUDGET (OBLIGATIONAL) AUTHORITY FOR 2023
AND BUDGET REQUESTS AND AMOUNTS RECOMMENDED IN THE BILL FOR 2024
(Amounts in thousands)

	FY 2023 Enacted	FY 2024 Request	Bill	Bill vs. Enacted	Bill vs. Request

Fuel Cycle Research and Development:					
Front End Fuel Cycle:					
Mining, Conversion, and Transportation.....	2,000	1,500	2,000	---	+500
Advanced Nuclear Fuel Availability.....	---	120,000	120,000	+120,000	---
Subtotal, Front End Fuel Cycle.....	2,000	121,500	122,000	+120,000	+500
Material Recovery and Waste Form Development.....	45,000	39,000	55,000	+10,000	+16,000
Advanced Fuels:					
Accident Tolerant Fuels.....	114,000	108,900	120,000	+6,000	+11,100
Triso Fuel and Graphite Qualification.....	32,000	25,000	35,000	+3,000	+10,000
Subtotal, Advanced Fuels.....	146,000	133,900	155,000	+9,000	+21,100
Fuel Cycle Laboratory R&D.....	29,000	29,000	34,000	+5,000	+5,000
Used Nuclear Fuel Disposition R&D.....	47,000	46,875	47,000	---	+125
Integrated Waste Management System.....	53,000	53,000	18,000	-35,000	-35,000
Subtotal, Fuel Cycle Research and Development...	322,000	423,275	431,000	+109,000	+7,725

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(Amounts in thousands)

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Reactor Concepts RD&D:					
Advanced Small Modular Reactor RD&D.....	165,000	20,000	150,000	-15,000	+130,000
Light Water Reactor Sustainability.....	45,000	35,000	45,000	---	+10,000
Advanced Reactor Technologies.....	49,000	43,200	43,200	-5,800	---
Subtotal, Reactor Concepts RD&D.....	259,000	98,200	238,200	-20,800	+140,000

Advanced Reactors Demonstration Program:					
National Reactor Innovation Center.....	50,000	34,000	65,000	+15,000	+31,000
23-E-200 Laboratory for Operations and Testing in the United States.....	20,000	32,000	32,000	+12,000	---
Demonstration 1.....	---	---	30,000	+30,000	+30,000
Demonstration 2.....	---	---	30,000	+30,000	+30,000
Risk Reduction for Future Demonstrations.....	---	120,000	130,000	+130,000	+10,000
Regulatory Development.....	10,250	11,000	11,000	+750	---
Advanced Reactors Safeguards.....	4,750	6,000	6,000	+1,250	---
Subtotal, Advanced Reactors Demonstration Program.....	85,000	203,000	304,000	+219,000	+101,000

COMPARATIVE STATEMENT OF NEW BUDGET (OBLIGATIONAL) AUTHORITY FOR 2023
AND BUDGET REQUESTS AND AMOUNTS RECOMMENDED IN THE BILL FOR 2024
(Amounts in thousands)

	FY 2023 Enacted	FY 2024 Request	Bill	Bill vs. Enacted	Bill vs. Request

Infrastructure:					
ORNL Nuclear Facilities O&M.....	20,000	---	---	-20,000	---
INL Facilities Operations and Maintenance.....	318,924	318,924	333,022	+14,098	+14,098
Construction:					
16-E-200 Sample Preparation Laboratory, INL.....	7,300	---	---	-7,300	---
Subtotal, Construction.....	7,300	---	---	-7,300	---
Subtotal, Infrastructure.....	346,224	318,924	333,022	-13,202	+14,098
Idaho Sitewide Safeguards and Security.....	150,000	177,733	160,000	+10,000	-17,733
International Nuclear Energy Cooperation.....	---	13,000	---	---	-13,000
Program Direction.....	85,000	85,500	85,500	+500	---
NEUP, SBIR/STTR, and TCF.....	130,276	146,710	135,000	+4,724	-11,710
TOTAL, NUCLEAR ENERGY.....	1,473,000	1,562,620	1,783,000	+310,000	+220,380
	=====	=====	=====	=====	=====

COMPARATIVE STATEMENT OF NEW BUDGET (OBLIGATIONAL) AUTHORITY FOR 2023
AND BUDGET REQUESTS AND AMOUNTS RECOMMENDED IN THE BILL FOR 2024
(Amounts in thousands)

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FOSSIL ENERGY AND CARBON MANAGEMENT					
Carbon Management Technologies:					
Carbon Capture.....	135,000	144,000	100,000	-35,000	-44,000
Carbon Dioxide Removal.....	70,000	70,000	15,000	-55,000	-55,000
Carbon Utilization.....	50,000	50,000	80,404	+30,404	+30,404
Carbon Transport and Storage.....	110,000	110,000	95,000	-15,000	-15,000
Hydrogen with Carbon Management.....	95,000	85,000	95,000	---	+10,000
Carbon Management - Policy, Analysis, and Engagement	---	5,000	---	---	-5,000
Subtotal, Carbon Management Technologies.....	460,000	464,000	385,404	-74,596	-78,596
Advanced Remediation Technologies.....	55,000	13,000	67,000	+12,000	+54,000
Methane Mitigation Technologies.....	60,000	100,000	20,000	-40,000	-80,000
Natural Gas Decarbonization and Hydrogen Technologies.....	26,000	20,000	17,500	-8,500	-2,500
Mineral Sustainability.....	54,000	45,000	150,000	+96,000	+105,000
Resource Sustainability - Analysis and Engagement...	---	1,000	---	---	-1,000
Subtotal, Resource Technologies and Sustainability	195,000	179,000	254,500	+59,500	+75,500

COMPARATIVE STATEMENT OF NEW BUDGET (OBLIGATIONAL) AUTHORITY FOR 2023
AND BUDGET REQUESTS AND AMOUNTS RECOMMENDED IN THE BILL FOR 2024
(Amounts in thousands)

	FY 2023 Enacted	FY 2024 Request	Bill	Bill vs. Enacted	Bill vs. Request
Energy Asset Transformation.....	6,000	6,000	---	-6,000	-6,000
Program Direction.....	70,000	92,475	70,000	---	-22,475
Special Recruitment Programs.....	1,000	1,000	1,000	---	---
University Training and Research.....	13,000	19,000	5,000	-8,000	-14,000
NETL Research and Operations.....	87,000	89,000	87,000	---	-2,000
NETL Infrastructure.....	55,000	55,000	55,000	---	---
NETL Interagency Working Group.....	3,000	---	---	-3,000	---
	=====	=====	=====	=====	=====
TOTAL, FOSSIL ENERGY AND CARBON MANAGEMENT	890,000	905,475	857,904	-32,096	-47,571
	=====	=====	=====	=====	=====
ENERGY PROJECTS	221,969	---	---	-221,969	---
NAVAL PETROLEUM AND OIL SHALE RESERVES.....	13,004	13,010	13,010	+6	---
STRATEGIC PETROLEUM RESERVE	207,175	280,969	280,969	+73,794	---

COMPARATIVE STATEMENT OF NEW BUDGET (OBLIGATIONAL) AUTHORITY FOR 2023
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(Amounts in thousands)

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SPR PETROLEUM ACCOUNT					
SPR Petroleum Account.....	100	---	---	-100	---
SPR Petroleum Account Rescission.....	-2,052,000	---	---	+2,052,000	---
	=====	=====	=====	=====	=====
TOTAL, SPR PETROLEUM ACCOUNT.....	-2,051,900	---	---	+2,051,900	---
	=====	=====	=====	=====	=====
NORTHEAST HOME HEATING OIL RESERVE.....	7,000	7,150	7,150	+150	---
ENERGY INFORMATION ADMINISTRATION.....	135,000	156,550	135,000	---	-21,550
NON-DEFENSE ENVIRONMENTAL CLEANUP					
Fast Flux Test Reactor Facility (WA).....	3,200	3,200	3,200	---	---
Gaseous Diffusion Plants.....	130,938	132,983	132,983	+2,045	---
Small Sites.....	132,463	122,635	115,635	-16,828	-7,000
West Valley Demonstration Project.....	89,882	89,882	89,882	---	---
Management and Storage of Elemental Mercury.....	2,100	---	---	-2,100	---
Mercury Receipts.....	3,000	3,000	3,000	---	---
Use of Mercury Receipts.....	-3,000	-3,000	-3,000	---	---
	=====	=====	=====	=====	=====
TOTAL, NON-DEFENSE ENVIRONMENTAL CLEANUP.....	358,583	348,700	341,700	-16,883	-7,000
	=====	=====	=====	=====	=====

COMPARATIVE STATEMENT OF NEW BUDGET (OBLIGATIONAL) AUTHORITY FOR 2023
AND BUDGET REQUESTS AND AMOUNTS RECOMMENDED IN THE BILL FOR 2024
(Amounts in thousands)

	FY 2023 Enacted	FY 2024 Request	Bill	Bill vs. Enacted	Bill vs. Request

URANIUM ENRICHMENT DECONTAMINATION AND DECOMMISSIONING FUND					
Oak Ridge.....	92,946	91,000	91,000	-1,946	---
Nuclear Facility D&D, Paducah.....	240,000	217,874	240,000	---	+22,126
Portsmouth:					
Nuclear Facility D&D, Portsmouth.....	424,354	418,258	418,258	-6,096	---
Construction:					
20-U-401 On-site Waste Disposal Facility (Cell Line 2&3).....	56,040	74,552	74,552	+18,512	---
Subtotal, Portsmouth.....	480,394	492,810	492,810	+12,416	---
Pension and Community and Regulatory Support.....	50,912	31,398	31,398	-19,514	---
Title X Uranium/Thorium Reimbursement Program.....	14,800	24,400	10,000	-4,800	-14,400
	=====	=====	=====	=====	=====
TOTAL, UED&D FUND.....	879,052	857,482	865,208	-13,844	+7,726
	=====	=====	=====	=====	=====

COMPARATIVE STATEMENT OF NEW BUDGET (OBLIGATIONAL) AUTHORITY FOR 2023
AND BUDGET REQUESTS AND AMOUNTS RECOMMENDED IN THE BILL FOR 2024
(Amounts in thousands)

	FY 2023 Enacted	FY 2024 Request	Bill	Bill vs. Enacted	Bill vs. Request

TECHNOLOGY TRANSITIONS					
Foundation for Energy Security and Innovation.....	---	31,000	---	---	-31,000
Technology Transitions Programs.....	8,915	11,911	8,915	---	-2,996
Program Direction.....	13,183	13,639	13,183	---	-456
	=====	=====	=====	=====	=====
TOTAL, TECHNOLOGY TRANSITIONS.....	22,098	56,550	22,098	---	-34,452
	=====	=====	=====	=====	=====
CLEAN ENERGY DEMONSTRATIONS					
Demonstrations.....	64,000	170,000	---	-64,000	-170,000
Program Direction.....	25,000	45,300	35,000	+10,000	-10,300
	=====	=====	=====	=====	=====
TOTAL, CLEAN ENERGY DEMONSTRATIONS.....	89,000	215,300	35,000	-54,000	-180,300
	=====	=====	=====	=====	=====
ADVANCED RESEARCH PROJECTS AGENCY-ENERGY					
ARPA-E Projects.....	433,000	595,000	433,000	---	-162,000
Program Direction.....	37,000	55,200	37,000	---	-18,200
	=====	=====	=====	=====	=====
TOTAL, ARPA-E.....	470,000	650,200	470,000	---	-180,200
	=====	=====	=====	=====	=====
TITLE 17 - INNOVATIVE TECHNOLOGY LOAN GUARANTEE PGM					
New Loan Authority.....	150,000	---	---	-150,000	---
Guaranteed Loan Subsidy (rescission).....	-150,000	---	---	+150,000	---