



FY2022 APPROPRIATIONS REPORT LANGUAGE CHART

INTERIOR-ENVIRONMENT (EPA)

FY22 Joint Explanatory Statement	FY 22 House Report	FY 22 Senate Report
	ENERGY STAR	
	NONE	

ENERGY-WATER (EERE)

FY22 Joint Explanatory Statement	FY22 House Report	FY 22 Senate Report
	ENERGY STAR	
	NONE	NONE

Advanced Research Projects Agency – Energy (ARPA-E)

	<p>(pp. 154-155) 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 our critical economic, environmental, and energy security challenges. The technology breakthroughs funded by ARPA-E have significant commercial impact and have received billions of dollars in private-sector funding to continue to advance those technologies toward the marketplace. Projects funded by ARPA-E include wide-ranging areas such as production processes for transportation fuel alternatives that can reduce our dependence on imported oil, low-cost electric aviation technologies, enhancing the environmental and economic potential of crop roots, and accelerating the development of commercial fusion energy.</p> <p>The budget request proposes the establishment of an Advanced Research Projects Agency—Climate (ARPA-C). However, the budget request justification notes that ARPA-C will require legislation beyond the current ARPA-E authorization. The Committee notes that ARPA-E has authority “to address the energy and environmental</p>	<p>(p. 70) DEPARTMENT OF ENERGY</p> <p>OVERVIEW OF RECOMMENDATION</p> <p>The Committee recommendation sets priorities by supporting the Office of Science and the Advanced Research Projects Agency-Energy [ARPA-E], leading the world in scientific computing, addressing the Federal Government’s responsibility for environmental cleanup and disposal of used nuclear fuel, keeping large construction projects on time and on budget, effectively maintaining our nuclear weapons stockpile, and supporting our nuclear Navy.</p> <p>(pp. 116-117) ADVANCED RESEARCH PROJECTS AGENCY—ENERGY</p> <p>The Committee recommends \$500,000,000 for the Advanced Research Projects Agency-Energy, equal to the budget request. Within available funds, the Committee recommends \$37,000,000 for program direction.</p> <p>The budget request proposes the establishment of</p>
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	<p>missions of the Department,” according to section 5012 of the America COMPETES Act. This includes climate-related innovations, and further, the Committee notes that ARPA-E already funds such activities. The Department is directed to conduct the proposed activities through ARPA-E. Additionally, the budget request proposes funds for other federal agencies in support of ARPA-C’s mission. The Department is directed to support and coordinate any such efforts through ARPA-E.</p> <p>The Committee supports the recent activities of ARPA-E aimed to support the scaling of high-risk and potentially disruptive ARPA-E funded technologies across the full spectrum of energy applications.</p>	<p>an Advanced Research Projects Agency-Climate [ARPA-C]. The Committee supports the budget’s approach to focus on climate innovations and emission reduction; however, the budget request justification notes that ARPA-C will require legislation beyond the current ARPA-E authorization. The Committee encourages ARPA-E to consider proposed activities under ARPA-C that are consistent with ARPA-E’s mission and authorization in addition to its other current and proposed activities. Additionally, ARPA-E shall coordinate funding from other Federal agencies in support of ARPA-C, if such funds are provided.</p> <p>The Committee recognizes the importance of helping promising, early-stage energy technologies bridge the gap between lab-scale trials and commercial viability. Further, the Committee supports the recent activities of ARPA-E aimed to support the scaling of high-risk and potentially disruptive ARPA-E funded technologies across the full spectrum of energy applications.</p>
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Weatherization and Intergovernmental Programs

	<p>(pp. 124-127) <i>Weatherization and Intergovernmental Programs</i>.—Within available funds for Training and Technical Assistance, the recommendation provides \$500,000 for technical assistance to continue the Sustainable Wastewater Infrastructure of the Future Accelerator.</p> <p>Within available funds for the Weatherization Assistance Program (WAP), the recommendation provides \$3,000,000 to support community-scale weatherization. The Department is directed to make these funds available directly to WAP grantees that present targeted and innovative use of these dollars to model methods for WAP integration with the various other weatherization programs, including but not limited to the HOME Investment Partnership Program, Low-Income Home Energy Assistance Program, and private utility supported weatherization funds. The grants shall be used to weatherize multiple homes as part of an integrated weatherization approach or for community groups as they</p>	<p>(pp. 89-90) WEATHERIZATION AND INTERGOVERNMENTAL PROGRAM</p> <p>The Committee recommends \$508,000,000 for the Weatherization and Intergovernmental Program.</p> <p>Within this amount, \$398,000,000 is recommended for Weatherization, including \$375,000,000 for the Weatherization Assistance Program [WAP] and \$8,000,000 for Training and Technical Assistance. The Committee recommends \$70,000,000 for State Energy Program [SEP] grants. The Committee encourages the Department to work with all relevant stakeholders to identify efficiencies for delivering weatherization services and examine options to streamline policies and procedures when other funding sources are utilized in conjunction with funds from the Department.</p> <p>The Committee supports WAP’s continued</p>
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	<p>attempt to take a broader approach to weatherization at mobile home communities, multi-family units, or in communities that share a common small-scale alternative energy resource. These community-scale grants may also test new models for effectively enrolling multiple individuals across a targeted community or incorporating the broader health impacts of weatherization as WAP organizations attempt to enroll individuals across a neighborhood or multi-home approach. The Department is directed to regularly brief the Committee on progress to implement these community-scale weatherization grants.</p> <p>The Department is directed to provide to the Committee not later than 90 days after enactment of this Act a briefing relating to ongoing efforts at the Department to collaborate with partners at Department of Health and Human Services, the Department of Housing and Urban Development, and the Department of Veterans Affairs. Interagency collaboration among federal agencies could be particularly helpful for identifying and weatherizing residences under the various agencies' weatherization programs. The Department is encouraged to work collaboratively with other federal agencies and to outline ways the various weatherization and home assistance programs can better integrate assistance for structurally deficient but weatherable residences.</p> <p>The Committee recognizes that WAP is particularly important for bringing energy efficiency to communities that most need it. The Committee notes the importance of WAP to directly fund building retrofits and its important role focusing on equity, including moderating energy demand and the cost burden faced by low-income communities. The Committee also recognizes the importance of the State Energy Program's (SEP) support for a wide range of state energy initiatives, including energy audits, building retrofits, and alternative vehicles purchasing. The Committees notes that SEP also ensures the safety, security, and resilience of the grid in the face of increasing weather events.</p> <p>The Committee recognizes the importance of providing federal funds under the Weatherization and</p>	<p>participation in the interagency working group on Healthy Homes and Energy with the Department of Housing and Urban Development. The Department is encouraged to further coordinate with the Office of Lead Hazard Control and Healthy Homes on energy-related housing projects. The Committee encourages the Department to begin tracking the occurrence of window replacements, which supports the reduction of lead-based paint hazards in homes.</p> <p>The Committee recognizes the importance of providing Federal funds under the Weatherization and Intergovernmental Program to States and Tribes in a timely manner to avoid any undue delay of services to eligible low-income households, and to encourage local high-impact energy efficiency and renewable energy initiatives and energy emergency preparedness. Therefore, the full amount of the funds recommended for WAP and the SEP shall be obligated to States, Tribes, and other direct grantees not later than 60 days after enactment of this act. The Committee is concerned with the reduction of mission-critical staff at the Office of Weatherization and Intergovernmental Programs and directs the office to achieve staffing levels that will allow it to provide robust training, technical assistance, and oversight for WAP and SEP.</p> <p>Within available funds, the Committee recommends that \$1,000,000 be made available to WAP grant recipients that have previously worked with the Department via the Weatherization Innovation Pilot Program, for the purpose of developing and implementing state and regional programs to treat harmful substances, including vermiculite.</p> <p><i>Weatherization Readiness Fund.</i>—The Committee supports the creation of a new Weatherization Readiness Fund to enable more low-income households to receive WAP support by providing funds to address structural and health and safety issues to reduce the frequency of deferred homes that are not weatherization ready when WAP work</p>
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	<p>Intergovernmental Program to states and tribes in a timely manner to avoid any undue delay of services to eligible low-income households and to encourage local high-impact energy efficiency and renewable energy initiatives and energy emergency preparedness. Therefore, the Department is encouraged to obligate funds recommended for WAP and SEP to states, tribes, and other direct grantees not later than 60 days after enactment of this Act. The Committee is concerned with the reduction of staff at the Office of Weatherization and Intergovernmental Programs and directs the Department to achieve staffing levels that will allow it to provide robust training, technical assistance, and oversight for WAP and SEP.</p> <p>In consultation with the Department of Housing and Urban Development, the Department is encouraged to investigate how the federal government can act immediately to fund, support, and expand state and local efforts to decarbonize low- and moderate-income housing through beneficial electrification of heating and cooling, including as part of efforts to conduct healthy, deep energy retrofits in such housing. The Department is further encouraged to collaborate with the Department of Housing and Urban Development to outline potential implementation pathways to achieve healthy, deep energy retrofits of 10 to 15 million low-income homes, including in all federally subsidized housing, by 2030, including the installation of all-electric systems to lower energy bills and eliminate carbon emissions. The Department is directed to provide to the Committee not later than 90 days after enactment of this Act a written status update on these activities.</p> <p><i>Weatherization Readiness Fund.</i>—The Committee supports the creation of a new Weatherization Readiness Fund to enable more low-income households to receive Weatherization Assistance Program support by providing funds to address structural and health and safety issues to reduce the frequency of deferred homes that are not weatherization ready when WAP work crews enter the home to perform retrofit services.</p> <p><i>Local Government Clean Energy Workforce Program.</i>—The Committee supports the Local Government Clean Energy</p>	<p>crews enter the home to perform retrofit services.</p> <p><i>Local Government Clean Energy Workforce Program.</i>—The Committee supports the Local Government Clean Energy Workforce Program to provide competitive awards, on-site capacity, peer exchanges, and technical assistance to support the development and deployment of transformative clean energy programs that create good paying jobs working with qualifying local governments and Tribal Nations, with a focus on energy communities and disadvantaged or small-to-medium jurisdictions.</p> <p>The Department is encouraged to consider projects that implement best practices to advance energy efficiency adoption, building and vehicle electrification, grid modernization, distributed electricity generation, and workforce development at the local level. These activities shall include work with and support for organizations that convene and support municipal governments.</p>
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Workforce Program to provide competitive awards, on-site capacity, peer exchanges, and technical assistance to support the development and deployment of transformative clean energy programs that create good paying jobs working with qualifying local governments and tribal nations, with a focus on energy communities and disadvantaged or small-to-medium jurisdictions.

The Department is encouraged to consider projects that implement best practices to advance energy efficiency adoption, building and vehicle electrification, grid modernization, distributed electricity generation, and workforce development at the local level. These activities should include work with and support for organizations that convene and support municipal governments.

Build Back Better Challenge Grants.—The Committee supports the proposed Build Back Better Challenge Grants program. The Department is directed to support novel state-, local-, and Tribal-level approaches that encourage early action and novel methods for clean energy deployment, prioritizing investments that meet energy needs at the local level and are inclusive in elevating impoverished, disenfranchised, marginalized, or overburdened communities. The Department is directed to conduct this program on a competitive basis where entities apply to the Department. Eligible entities shall include states, local governments, communities, U.S. territories, and tribes. The Department is directed to provide to the Committee not later than 30 days after enactment of this Act and prior to obligation of any funds a briefing on its implementation plan for the Build Back Better Challenge Grants program.

The Committee recognizes the importance of these investments to deploy clean energy technologies to help communities address climate change, criteria air pollutants, and energy resiliency from climate-related weather events. The Department is encouraged to consider clean energy microgrids that support critical community infrastructure, to prioritize projects in environmental justice communities, to require eligible entities to prioritize contracts to implement grants for minority-owned and operated entities

	<p>or women-owned and operated entities, and to require that funded projects pay wages at rates not less than those prevailing on similar construction, alteration, installation, or repair work in the locality as determined by the Secretary of Labor in accordance with subchapter IV of chapter 31 of title 40, United States Code.</p> <p>The Department is encouraged to consider grants to units of local government to develop building energy efficiency retrofit programs to conduct energy efficiency audits and purchase energy efficiency upgrades for residential and commercial properties.</p> <p>The Department is encouraged to support projects that combine geothermal technologies with other emissions reduction technologies, such as solar, buildings, and efficiency technologies.</p> <p>The Committee believes it is critical that there is access to funding and support that helps to prevent future electricity disruptions, including support for local communities. The Department is encouraged to provide grants to entities for activities and infrastructure that ensure the electric grid is safe and secure from events that may disrupt it.</p> <p>The Department is encouraged to consider projects that implement best practices to advance energy efficiency adoption, building and vehicle electrification, grid modernization, distributed electricity generation, and workforce development at the local level. These activities should include work with and support for organizations that convene and support municipal governments.</p> <p>The Department is directed to provide to the Committee not later than 90 days after enactment of this Act a report on how the Department is implementing the Build Back Better Challenge Grants program.</p>	
Research & Development		
Building Technologies Office		
	(pp. 122-124) <i>Building Technologies</i> .—The recommendation provides not less than \$60,000,000 for Commercial Building Integration, not less than \$60,000,000 for Residential	(pp. 86-88) BUILDING TECHNOLOGIES

	<p>Buildings Integration, and not less than \$60,000,000 for Equipment and Building Standards. Within available funds for Equipment and Building Standards, the recommendation provides not less than \$10,000,000 for Building Energy Codes to increase training, including certifications, and provide technical assistance to states, local governments, regional collaboratives, workforce development providers, homebuilders, office builders, architects, engineers, and other organizations that develop, adopt, or assist with the adoption or compliance with model building energy codes and standards to improve energy efficiency and resilience. Within available funds, the recommendation supports smart building acceleration, as authorized in section 1007 of the Energy Act of 2020, and the Department is directed to prioritize these activities.</p> <p>The recommendation provides up to \$40,000,000 to expand efforts to accelerate adoption of electric heat pumps. The recommendation provides up to \$50,000,000 for activities to accelerate grid-enabled buildings and reduce barriers to dynamic, responsive building energy use that can meet customers' needs and support a reliable electric grid.</p> <p>The Department is directed to develop programs to support a skilled, robust, diverse, and nationally representative energy efficiency and building electrification workforce. The recommendation provides up to \$30,000,000 for these activities. The Department is encouraged to collaborate with the Department of Education and the Department of Labor on educational and worker training programs. Further, the Department is encouraged to develop strategies and activities to increase adoption of energy-saving and emissions-reducing technologies for low-income households, multifamily buildings, and minority communities.</p> <p>The recommendation provides up to \$40,000,000 for solid-state lighting, including field evaluations that examine the potential of advanced, tunable lighting to deliver health, wellness, and productivity benefits, in addition to greater energy efficiency. If the Secretary finds solid-state lighting technology eligible for the Twenty-First Century Lamp prize, specified under 655 of the Energy Independence and</p>	<p>The Committee recommends \$382,000,000 for Building Technologies.</p> <p>Across all of these efforts, where appropriate, the Buildings Technologies Office is encouraged to collaborate with OE and CESER, especially including efforts pertaining to improved building-to-grid interactions and integration of energy storage and renewable energy. Within available funds for Emerging Technologies, the Committee encourages the Department to make funding available for Heating, Ventilation, and Air Conditioning [HVAC] and Refrigeration Research, Development and deployment, including heat pumps, heat pump water heaters and boilers. The Department shall focus its efforts to address whole building energy performance and cost issues to inform efforts to advance beneficial electrification and greenhouse gas mitigation without compromising building energy performance. The Committee encourages the Department to develop strategies and activities to increase adoption of energy-saving and emissions-saving technologies for low-income households, multi-family buildings, and minority communities.</p> <p>Within the amounts provided for the Building Technologies Office, the recommendation includes not less than \$50,000,000 for advanced HVAC and dehumidification manufacturing scale-up projects.</p> <p><i>Equipment and Building Standards.</i>—The Committee recommends \$62,000,000 for Equipment and Buildings Standards.</p> <p>The Committee recommends \$20,000,000 for the Building Energy Codes Program to increase training, including certifications, and provide technical assistance to states, local governments, regional collaboratives, workforce development providers, homebuilders, office builders, architects and engineers, and other organizations that develop, adopt, or assist with the adoption or compliance with</p>
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	<p>Security Act of 2007, \$5,000,000 shall be made available to fund the prize or additional projects for solid-state lighting research and development.</p> <p>The recommendation provides \$5,000,000 for the establishment of a Heat Pump Consortium to integrate and deploy heat pump technologies in a joint industry partnership. The Department is directed to provide to the Committee not later than 90 days after enactment of this Act a briefing on how the consortium will incorporate thermal heat pump technologies.</p> <p>The Committee notes that natural gas and propane gas currently play a role in meeting energy needs of U.S. homes and commercial buildings. While the Department is encouraged to focus its natural gas and propane gas activities on energy efficiency efforts, including applications that integrate with renewables, the Department is directed to phase down all research, development, and commercialization work related to gas systems and appliances. Further, the Department is encouraged to study the future market commercialization of combined heat and power, including integration with renewables, and how the commercialization will increase energy efficiency efforts nationwide.</p> <p>The Department is directed to continue to fulfill its statutory obligation to promulgate natural gas appliance standards and to provide support for building energy codes development and adoption.</p> <p>The Department is encouraged to continue to invest in transactive energy and control research, development, and demonstration activities to allow buildings, energy generation and storage assets, and the electrical grid to seamlessly interact to enhance reliability, security, and efficiency of the nation's electrical distribution systems. The effort should be implemented at an existing, successful development and demonstration platform at a university center. The Department is encouraged to emphasize the integration of renewable energy assets, such as photovoltaics, associated hardware and software development, and the establishment of a living and learning</p>	<p>model building energy codes and standards to improve energy efficiency and resilience.</p> <p>The Committee supports continued research to quantify the resilience impacts of energy codes for buildings, occupants, and communities. Recognizing that the pandemic has presented challenges to permit processing for building departments reliant on paper-based systems, the Committee encourages the development of cloud-based software that can facilitate permit processing for projects that conserve energy or promote resilience as well as efforts to help departments modernize systems.</p> <p>The Committee directs EERE to carry out the Grid-interactive Efficient Buildings [GEB] program to ensure that a high level of energy efficiency is a core element of the program and a baseline characteristic for GEBs, which are also connected, smart, and flexible. EERE shall engage with the public and private sectors, including the building and manufacturing industries and state and local governments, to share information on GEB technologies, costs, and benefits, and to provide information to position American companies to lead in this area. In addition, EERE is reminded to follow the National Technology Transfer and Advancement Act and related guidance in testing and applying relevant existing and emerging standards developed by non-governmental organizations.</p> <p>Within available funds, the Committee recommends \$72,000,000 for the Residential Building Integration program. The Committee recommends this increase to advance building upgrades and weatherization of homes, as well as to advance work in grid-integrated efficient buildings and inclusion of smart grid systems, demand flexibility and new initiatives in workforce training to ensure the technology and research findings reach practitioners. The Committee encourages funding to be concentrated on industry teams to facilitate research, demonstrate and test new systems, and facilitate</p>
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	<p>laboratory that integrates training of new and current professionals.</p> <p>The Department is directed to expand its work to advance building upgrades and weatherization of homes, as well as to advance work in grid-integrated efficient buildings and inclusion of smart grid systems, demand flexibility and new initiatives in workforce training to ensure the technology and research findings reach practitioners. The Committee encourages funding to be used to facilitate widespread deployment and dissemination of information and best practices through direct engagement with builders, labor organizations, equipment manufacturers, smart grid technology and systems suppliers, integrators, state and local governments, and other market transformation activities. The Department is encouraged to support deep whole-house energy efficiency retrofits, including outreach, engagement, and training to private sector contractors, and encouraged to continue efforts to advance smart home technology.</p> <p>The Building Technologies Office is encouraged to collaborate with other offices throughout the Department, especially including efforts pertaining to improved building-to-grid interactions and integration of energy storage and renewable energy.</p> <p>The Department is directed to provide to the Committee not later than 120 days after enactment of this Act a briefing outlining the opportunities and challenges in deploying energy efficient building technologies to public buildings and buildings that host providers, such as food banks, serving community needs. The briefing should estimate the resource potential, outline mechanisms that could be employed to overcome the challenges of widespread deployment of energy efficient technologies, and the potential role of other federal agencies.</p> <p>Within available funds for Emerging Technologies, the Committee encourages activities for heating, ventilation, and air conditioning (HVAC) and refrigeration research, development, and demonstration, to include heat pumps, heat pump water heaters, and boilers. The Department</p>	<p>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. Further, the Committee recommends funding to facilitate deep whole-house energy efficiency retrofits, including outreach, engagement and training to private sector contractors, including continuing efforts to advance smart home technology. The Committee supports continued efforts to address property rating and valuation in commercial and residential buildings as a way to improve the transparency of energy utilization in buildings for persons and companies buying or leasing property.</p> <p>The Committee encourages the Department to continue to explore research and development that can advance future natural gas and propane gas systems and appliances to meet consumer demand for high efficiency and environmentally friendly products. The Committee recommends continued research, development, and market transformation programs on energy efficiency 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 to include cooling integration with renewables.</p> <p>Within available funds, the Committee recommends \$74,000,000 for the Commercial Building Integration program for core research and development of more cost-effective integration techniques and technologies that could help the transition toward deep retrofits. In addition, the Committee encourages the Department to increase engagement with private sector stakeholders to</p>
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	<p>should focus efforts to address whole building energy performance and cost issues to inform efforts to advance beneficial electrification and greenhouse gas mitigation without compromising building energy performance.</p>	<p>develop market-transforming policies and investments in commercial building retrofits.</p> <p>The Department is encouraged to prioritize understanding of regional differences in energy systems and their impact on adoption of transactive energy technologies. The recommendation provides not less than \$30,000,000 for Buildings-to-Grid integration research and development consistent with a transactive energy system and in coordination with the OE transactive energy systems program.</p> <p>The Committee notes that the Department has missed over 30 legal deadlines related to energy efficiency standards mandated by Congress. The Committee understands that the Department is working to complete these rulemakings expeditiously and directs the Department to finalize these standards as soon as practicable. The Committee directs the Department to report within 30 days of enactment of this act on the status of each of these standards, and any funding or staffing barriers to finalizing these standards.</p>
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Advanced Manufacturing Office

	<p>(pp. 118-122) <i>Advanced Manufacturing</i>.—The recommendation provides \$25,000,000 for the Energy-Water Desalination Hub and not less than \$5,000,000 for improvements in the steel industry.</p> <p>The Committee notes that industrial drying processes consume approximately 10 percent of the process energy used in the manufacturing sector. The recommendation provides \$10,000,000 to improve the efficiency of industrial drying processes.</p> <p>The Committee recognizes the potential for energy savings in water and wastewater treatment systems, which are among the country’s largest industrial electricity users. The Committee appreciates the Department’s work on technical assistance in this area and provides \$5,000,000 to expand the technical assistance provided for water and wastewater treatment. The Department is directed to provide to the Committee not later than 120 days after enactment of this</p>	<p>(pp. 84-86) <i>Advanced Manufacturing</i>.—The Committee recommends \$560,500,000 for Advanced Manufacturing. The Committee recommends \$25,000,000 for the Manufacturing Demonstration Facility [MDF] and the Carbon Fiber Technology Facility.</p> <p>Within available funds for MDF, \$5,000,000 is provided for the development of processes for materials solutions.</p> <p>The Committee recognizes the significant grid resilience benefits that distributed-scale highly-efficient natural gas engines can provide to the nation’s electricity grid and notes the need for more aggressive Federal support for research and development of this promising technology. Therefore, the Committee recommends \$4,000,000 to be competitively awarded to industry to develop</p>
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	<p>Act a briefing on its plan to ensure the technical assistance is aligned with the related programs operated by the U.S. Environmental Protection Agency and the U.S. Department of Agriculture to assist communities that seek to upgrade systems to utilize energy efficient and alternative energy improvements at these facilities. The Department is directed to summarize its efforts to work with key stakeholders in this area, including wastewater and drinking water providers, to maximize the investment of these dollars to high priority targets. In addition, the recommendation provides \$20,000,000 for research and development on technologies to achieve energy efficiency of water and wastewater treatment plants, including the deployment of alternative energy sources, as appropriate.</p> <p>The recommendation provides \$10,000,000 for the development of advanced tooling for lightweight automotive components to lead the transition to electric vehicle and mobility solutions to meet the national urgency for market adoption. The Department is directed to further foster the partnership between the Manufacturing Demonstration Facility and universities and industry located in areas where existing industry is clustered to accelerate technology deployment and increase the competitiveness of U.S. manufacturing industries.</p> <p>The recommendation provides up to \$20,000,000 to continue development of additive manufacturing involving nanocellulose feedstock materials made from forest products. The Department is directed to conduct this work in partnership with the Manufacturing Demonstration Facility (MDF) in order to leverage expertise and capabilities for large scale additive manufacturing.</p> <p>The recommendation provides not less than \$20,000,000 for the Advanced Manufacturing Office to work in coordination with Hydrogen and Fuel Cell Technologies Office to support high-impact activities for the development and deployment of hydrogen and fuel cell technologies, including on the economic use of low-carbon hydrogen for industrial processes.</p>	<p>highly efficient natural gas engines to be used in electricity generation. Preference shall be given to projects that prioritize fast demand response and improved integration with building and institution-based microgrid systems, to further the resiliency of the nation’s electrical grid.</p> <p>The Committee recognizes the importance of developing recyclable wind turbine blades and directs the Department to support research and development in innovative approaches to enable manufacturing of wind turbine blades with novel thermoplastic resin systems to create brand new reversible and recyclable thermoplastic resins for future use in blade manufacturing. Within available funds, the Committee recommends \$5,000,000 for development of thermoplastic resin systems research.</p> <p>Within available funds for the Industrial Technical Assistance program, the Committee recommends \$12,000,000 to provide ongoing support for the Combined Heat and Power [CHP] Technical Assistance Partnerships [TAPs] and related CHP Technical Partnership activities at the Department, including \$5,000,000 for the TAPs and \$7,000,000 for related CHP activities. The Committee also encourages the Department to prioritize research, development, and demonstration of district energy systems and work to accelerate greater deployment of district energy systems in communities, campuses, industries, and cities nationwide by supporting adaptive regional and local technology, and market opportunities. The Committee further directs the Department to collaborate with industry on the potential energy efficiency and energy security gains to be realized with district energy systems.</p> <p>Within available funds, the Committee recommends up to \$20,000,000 for the Industrial Assessment Center [IAC] program. The Committee further directs the Department to apply the additional funding to support regions that are currently</p>
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	<p>The recommendation provides up to \$25,000,000 for a competitive solicitation to accelerate development of manufacturing processes needed for micro-battery technologies. The Department is encouraged to support awards that include strong end user participation and a clear path to market adoption.</p> <p>The recommendation provides \$25,000,000 for the Manufacturing Demonstration Facility (MDF) and the Carbon Fiber Technology Facility. Within available funds for MDF, the recommendation provides \$5,000,000 for the development of processes for hybrid materials solutions with prescribed microstructural and mechanical properties to enable precise property profiles for born qualified and certified components.</p> <p>The recommendation provides not less than \$10,000,000 for conversion and retooling of manufacturing industrial facilities, such as authorized by section 132 of the Energy Independence and Security Act of 2007 and section 712 of the Energy Policy Act of 2005, to support the domestic auto industry and to retain American competitiveness in building the vehicles of the future.</p> <p>The recommendation provides \$20,000,000 for process-informed science, design, and engineering materials and devices in harsh environments, including nuclear environments, and to demonstrate integrated energy systems applied to decarbonized steel making and refractory materials, including net zero or high-temperature hydrogen-based decarbonization. The recommendation provides \$10,000,000 for continued research for dynamic catalyst science coupled with data analytics.</p> <p>The recommendation provides not less than \$20,000,000 for electric vehicle battery manufacturing. The Department is directed to prioritize funding to partnerships and consortiums that include private industry, universities, and nonprofit organizations with expertise in electric vehicle manufacturing, electric vehicle workforce development, and regional innovation development.</p>	<p>designated as underserved through the IAC program. Within the funds provided for the Industrial Assessment Centers, the Committee recommends up to \$4,000,000 for applied technical assistance and the purchase and pilot testing of innovative technology. This equipment and technical assistance shall be provided to municipal or industrial entities that face significant water treatment challenges and for which piloting such technology would be of significant benefit. The Committee acknowledges the contributions of the Clean Energy Manufacturing Innovation Institutes [CEMIs] program as an important component of efforts to combat climate change by reducing carbon emissions from manufacturing, promoting recycling and conservation, and creating new companies and jobs for a greener economy. The Committee further believes that the continuation of Federal participation in the CEMI program is vital in order to maintain significant private investment and allow the Institutes to realize the goals for which they were established. Within available funds, the Committee encourages the Department to continue work of the CEMIs.</p> <p>The Committee supports additive manufacturing technologies for wind energy applications. Within available funds, \$4,000,000 to support additive manufacturing work on large wind blades that will allow for rapid prototyping, tooling, fabrication, and testing; \$7,000,000 for additive manufacturing of wind turbine components; and \$18,000,000 for advanced wind turbine blade manufacturing research, including additive composite tip technology, automation, and sustainability.</p> <p>The Committee recognizes the important role large-area additive manufacturing can play in helping to advance the deployment of building, transportation, and clean energy technologies. The Committee directs the Department to further foster the partnership between the national laboratories, universities, and industry to use bio-based</p>
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	<p>The recommendation provides \$10,000,000 for research, development, and demonstration activities that will enable U.S. manufacturers to increase the recovery, recycling, reuse, and remanufacturing of plastics, metals, electronic waste, and fibers.</p> <p>The recommendation provides up to \$10,000,000 for technical assistance grants, in coordination with the Building Technologies Office, to enable small- and medium-sized businesses to create independently verified and comparable assessments of the lifecycle emissions impact of construction materials using environmental product declarations. The Department is encouraged to work with the U.S. Environmental Protection Agency, National Institute of Standards and Technology, General Services Administration, and Office of Federal Procurement Policy on any efforts related to assessing lifecycle emissions of different materials and products.</p> <p>The recommendation provides up to \$25,000,000 for the Industrial Assessment Centers (IAC). The Department is encouraged to support regions that are currently designated as underserved through the IAC program.</p> <p>The recommendation provides \$13,000,000 to provide ongoing support for the Combined Heat and Power (CHP) Technical Assistance Partnerships (TAP) and related CHP activities.</p> <p>Recent advancements in machine learning have opened the door to increase the efficiency and sustainability of gold and silver metal extraction. The recommendation provides up to \$10,000,000 for the issuance of a competitive solicitation for industry-led teams to improve the efficiency and sustainability of gold and silver extraction through artificial intelligence and machine learning.</p> <p>The recommendation provides up to \$10,000,000 for efforts to promote Strategic Energy Management practices and up to \$30,000,000 for competitive grants to companies for the hiring or designation of plant energy managers. The Department is encouraged to focus efforts related to Strategic Energy Management on small- and medium-sized</p>	<p>thermoplastics composites, such as micro- and nanocellulosic materials, and large-area 3-D printing to overcome challenges to the cost and deployment of building, transportation, and energy technologies. In addition, the Committee recommends up to \$20,000,000 to continue the development of additive manufacturing involving nanocellulosic feedstock materials made from forest products to overcome challenges to the cost and deployment of building, transportation, and energy technologies, and encourages the Department to leverage expertise and capabilities for large-scale additive manufacturing through partnerships between universities and the MDF.</p> <p>The Committee notes that drying processes consume approximately 10 percent of the process energy used in the manufacturing sector and directs that within available funds, up to \$10,000,000 is recommended to be used to issue a competitive solicitation for university and industry-led teams to improve the efficiency of industrial drying processes.</p> <p>The Committee recognizes that progress is occurring at the demonstration level of extracting lithium from geothermal brine to create lithium chloride, but further research and development is needed to convert the extracted lithium chloride into lithium hydroxide, one of the final components of lithium-ion batteries. The Committee recommends \$15,000,000 to continue technology development to convert lithium chloride from geothermal brine into lithium hydroxide that will inform the design of a commercial-scale facility that will both extract lithium from geothermal brine and convert the lithium in geothermal brine into the lithium hydroxide.</p> <p>The Committee recognizes the growing need for the use of more sustainable chemistry in consumer and commercial products, which can create significant value as an economic opportunity for U.S. manufacturing. The Committee recommends</p>
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	<p>manufacturing. The recommendation provides up to \$55,000,000 for the Better Plants program to offer comprehensive assessment and engagements to the largest greenhouse gas emitting manufacturing facilities. The recommendation provides up to \$60,000,000 for competitive grants to provide cost-share payments to manufacturing plants for the installation of underutilized, existing low-carbon technologies. The recommendation provides up to \$30,000,00 for support of the development and adoption of smart manufacturing practices directed toward small- and medium-sized manufacturers. The recommendation provides up to \$55,000,000 for research, development, and deployment to develop and promote the adoption of technologies that can dramatically reduce the greenhouse gas emissions from process heating applications.</p> <p>The recommendation provides up to \$20,000,000 for the development of transformative processes for manufacturing-related carbon dioxide separation and utilization. The Department is directed to coordinate with the Office of Fossil Energy and Carbon Management as it proceeds with this work. The Department is encouraged to support research and development on carbon capture, utilization, and storage with an emphasis on utilization within industry processes and materials, low-carbon fuels, transformative technology that will allow deep industrial decarbonization, materials efficiency and circular economy, carbon intensity definitions and labeling across key product groups, and the steel industry.</p> <p>The Department is directed to carry out activities in accordance with title VI of the Energy Act of 2020. The Committee supports the expanded use of smart manufacturing technologies across a broad range of industrial users and encourages the Department to continue activities to lower the adoption hurdles of these emerging and transformative technologies.</p> <p>The Committee continues to support the Clean Energy Manufacturing Innovation (CEMI) Institutes. The Committee is aware of the existing six CEMI Institutes' capabilities and efforts in advancing clean-energy solutions</p>	<p>\$5,000,000 to support sustainable chemistry research and development. The fiscal year 2021 Act directed the Department to provide a report exploring how incorporating sustainable chemistry in consumer and commercial manufacturing processes fits within its research and development portfolio and can benefit these processes. The Committee is still awaiting this report and directs the Department to provide the report to the Committee not less than 30 days after enactment of this act.</p> <p>The Committee recommends \$5,000,000 to continue to develop and industrialize a low-cost polymer infiltration process for the fabrication of silicon carbide components. The Committee recognizes the Department's expertise in developing materials and processes for very high temperature applications. Silicon carbide ceramic matrix composites are a proven, capable material for high temperature applications.</p> <p>The Committee recommends not less than \$5,000,000 to apply the Department the Office of Science's leadership computing facility expertise in machine learning to increase efficiencies in large scale, high rate, aerostructures manufacturing. The Department is encouraged to leverage best practices from large-scale, high-rate commercial composite aerospace manufacturing.</p>
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that will help reduce pollution, greenhouse gas emissions, and dependence on oil while launching new businesses and creating high-wage, highly-skilled, clean-energy jobs. The Department is directed to provide to the Committee not later than 90 days after enactment of this Act a briefing on the potential benefits and considerations of renewing or extending existing CEMI agreements, including extensions of not less than five years.

The Department is encouraged to coordinate with the Solar Energy Technologies Offices on the use of solar technologies for long-duration storage and process heat for industrial applications.

The Committee remains supportive of the Critical Materials Energy Innovation Hub.

To remain competitive, the U.S. aerospace industry must continually increase efficiencies to meet increasing production rate demands. The Committee recognizes the Department's success in partnering with industry to solve its most challenging problems, including the development and deployment of artificial intelligence and machine learning. The Department is encouraged to continue to support the application of machine learning to increase efficiencies in large-scale, high-rate aerostructures manufacturing.

Silicon carbide ceramic matrix composites have been proven as a capable material for high temperature applications. The Department is encouraged to continue its efforts regarding silicon carbide components.

The Department is directed to provide to the Committee not later than 30 days after enactment of this Act a briefing on the status of its decarbonization roadmaps in key technology areas to guide research and development at the Department to achieve significant, economical greenhouse gas emission reductions by 2050, including energy efficiency, process electrification, industrial electrification technologies, and carbon capture.

The Committee recognizes the growing need for the use of more sustainable chemistry in consumer and commercial

	<p>products, which can create significant value as an economic opportunity for U.S. manufacturing. The fiscal year 2021 Act directed the Department to provide a report exploring how incorporating sustainable chemistry in consumer and commercial manufacturing processes fits within its research and development portfolio and can benefit these processes. The Committee is still awaiting this report and directs the Department to provide the report to the Committee not less than 30 days after enactment of this Act.</p> <p>The Committee supports the Department’s efforts to develop the next generation of energy and manufacturing entrepreneurs through the Lab-Embedded Partnership Programs. The Department is directed to brief the Committee not later than 90 days after enactment of this Act on the status of existing programs and the potential for establishing additional programs at national laboratories or DOE sites.</p> <p>The Committee encourages continued efforts at the Lithium Research Center to convert lithium chloride to lithium hydroxide. The Department is encouraged to support activities for the purposes of developing and building capabilities to process lithium ore into cathode-grade material of lithium hydroxide.</p>	
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Energy Information Administration

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Federal Energy Management Program

	<p>(p. 124) Federal Energy Management Program.—The recommendation provides not less than \$20,000,000 for the Department to continue its work through the Assisting Federal Facilities with Energy Conservation Technologies (AFFECT) program.</p> <p>The recommendation provides not less than \$2,000,000 for workforce development and the Performance Based Contract National Resource Initiative. The fiscal year 2020 Act directed the Department to provide a report that outlines the types of technical and financial expertise the Department is suited to provide and includes an analysis of the available infrastructure work that can be accomplished through performance-based contracts over a 10-year period and the resources necessary to achieve this goal. The</p>	<p>(pp. 88-89) FEDERAL ENERGY MANAGEMENT PROGRAM</p> <p>The Committee recommends \$60,000,000 for the Federal Energy Management Program. The recommendation provides not less than \$20,000,000 for the Department to continue its work through the Assisting Federal Facilities with Energy Conservation Technologies program.</p> <p>The recommendation provides not less than \$2,000,000 for work force development and the Performance Based Contract National Resource Initiative. The fiscal year 2020 Act directed the Department to provide a report that outlines the</p>
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	<p>Committee is still awaiting this report and directs the Department to provide this report not later than 15 days after enactment of this Act.</p> <p>The Department is directed to establish an improved process to assist in guiding infrastructure investments through energy performance contracts management, including, but not limited to, Energy Savings Performance Contracts (ESPCs) and Utility Energy Savings Contracts (UESCs), to effectively and efficiently reduce energy costs, reduce greenhouse gas emissions, and improve facilities. The Department is directed to conduct a solicitation for the Indefinite Delivery, Indefinite Quantity in fiscal year 2022 if additional funds are available for these activities that were not included in this Act. The Department is directed to ensure the availability of sufficient acquisition staffing resources to address energy saving measures, as well as to streamline and find efficiencies in the approval of projects to continue to provide climate, resilience, and economic benefits.</p>	<p>types of technical and financial expertise the Department is suited to provide and includes an analysis of the available infrastructure work that can be accomplished through performance-based contracts over a 10-year period and the resources necessary to achieve this goal. The Committee is still awaiting this report and directs the Department to provide this report not later than 15 days after enactment of this act.</p> <p>The Committee directs the Secretary to establish an improved process to assist in guiding infrastructure investments through energy performance contracts management, including, but not limited to Energy Savings Performance Contracts and Utility Energy Savings Contracts, in order to effectively and efficiently reduce energy costs, reduce greenhouse gas emissions, and improve facilities. The Committee directs the Secretary to ensure the availability of sufficient acquisition FTEs to address energy saving measures, as well as to streamline and find efficiencies in the approval of projects to continue to provide climate, resilience, and economic benefits. The Committee encourages the Secretary to leverage energy savings performance contracts so capital improvement projects involving energy systems, energy controls, and building envelopes awarded in fiscal year 2022 ensure maximum return on investment to the taxpayer.</p>
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Workforce Development

	<p>(pp. 96-98) WORKFORCE DEVELOPMENT AND DIVERSITY</p> <p><i>Workforce Development.</i>—The Committee recognizes the need to ensure that our nation has a ready, capable workforce both for today and the next generation to meet changing energy demands and safeguard our national nuclear security. The Department has a long history in and unique opportunity of training and supporting the science, technology, engineering, and mathematics workforce. The fiscal year 2020 Act directed the Department to provide a report that includes an inventory of workforce development and readiness programs supported throughout the</p>	<p>(p. 76) Workforce Development.—The Committee believes there are significant clean energy challenges related to the inclusion of students from underserved institutions in the technology development programs within the Department’s portfolio of manufacturing, solar, transportation and grid/energy storage. Clean energy programs can provide a much more inclusive talent pipeline. Accordingly, the Committee recommends \$5,000,000 to support an expansion of these efforts through a university which has existing partnerships with several Historically Black Colleges and Universities and Minority Serving Institutions, and</p>
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	<p>Department. The inventory was required to include current programs, past programs over the past 10 years, and recommendations for the Department to improve or expand its workforce development efforts. The report was required to include specific recommendations addressing workforce readiness to meet the Department’s nuclear security missions. The Committee is still awaiting this report and directs the Department to provide a briefing on the status of this report not later than 15 days after enactment of this Act.</p> <p>The Department is encouraged to allocate funding to training and workforce development programs that assist and support workers in trades and activities required for the continued growth of the U.S. energy efficiency and clean energy sectors, including training programs focused on building retrofit, 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.</p> <p>The Committee supports improving the coordination of federal efforts involved in growing and sustaining a robust national security workforce. The Committee recognizes the Department’s collaborations with the Department of Defense to address national security priorities including, but not limited to, climate change, electric infrastructure, nuclear energy, and space. The Committee recognizes the Department’s individual education and workforce development programs relating to the intersection of national security and energy but encourages interdepartmental coordination on the creation or modification of these programs. The Department is directed to continue participation in the Interagency Working Group on the National Security Workforce to implement the “Revitalizing America’s Foreign Policy and National Security Workforce, Institutions, and Partnerships” National Security Memorandum. Further, the Department is directed to participate in efforts led by the Department of Defense in</p>	<p>participants in several Departmental applied energy research programs. Further, the development of a skilled workforce is critical to the successful transition to a clean energy economy and deployment and long-term sustainability of energy efficient and renewable energy technologies. The Committee encourages EERE to support training and workforce development programs that assist and support workers in trades and activities required for the continued growth of the U.S. energy efficiency and clean energy sectors, with an emphasis on training programs focused on building retrofit and construction industries. Furthermore, the Committee encourages the Department to continue to work with two-year, public community, technical colleges, and non-governmental and industry consortia for job training programs, including programs focused on displaced fossil fuel workers, that lead to an industry-recognized credential in the energy workforce.</p>
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developing a strategy to address national security education and workforce issues.

Workplace Diversity.—The Committee recognizes the importance of workplace diversity at the Department and its national laboratories. Increasing workplace diversity addresses inequity and inequality and drives performance excellence through improvements in creativity, productivity, and inclusivity. The Committee directs the Department to continue to develop and broaden partnerships with minority serving institutions, including Hispanic Serving Institutions, Historically Black Colleges and Universities, Asian and Pacific Islander Serving Institutions, Predominantly Black Institutions, Tribal Colleges and Universities, and other Minority Serving Institutions. The Committee understands that each national laboratory develops its own recruitment and retention strategies and provides those plans to the Department for review. The fiscal year 2020 Act directed the Department to comprehensively evaluate these plans and provide a report to the Committee detailing efforts to recruit and retain diverse talent from the institutions mentioned above. Further, the fiscal year 2020 Act directed the Department to provide to the Committee a report on its internal programs that support research and development opportunities for the institutions mentioned above. The Committee is still awaiting these reports and directs the Department to provide a briefing on the status these reports not later than 30 days after enactment of this Act. Additionally, the Department is directed to provide to the Committee not later than 120 days after enactment of this Act a report on the Department’s plan to recruit and retain more African Americans, Hispanic/Latinx, Asian Americans, Native Americans/Alaskan Natives, Pacific Islander/Native Hawaiian, and people with disabilities across all job types, including research and technical positions. This report should also include current workforce numbers with disaggregated data for racial, ethnic, gender, and other underrepresented minorities at all national laboratories and across the Department. The Department is encouraged to consider direct programmatic funding to the national laboratories to support locally developed activities and programs that advance the Department’s diversity, equity, and inclusion goals and objectives.

Department Staffing

(p. 127) *Program Direction.*—The Committee appreciates the Department’s aggressive strategy to ensure that EERE is appropriately staffed to execute and oversee the funds provided by the Committee. The Committee expects continued, regular updates on its progress.

Equity and Justice

(pp. 98-99) *Equity and Justice.*—The Committee recognizes the importance of establishing a 21st-century clean energy system that will both combat climate change and institute principles of equity and justice in the U.S. energy system. The Committee supports the Department’s reforms toward this goal. In order to improve these practices at the Department, the Committee directs the Department to survey its current programs, policies, procedures, and rules to ensure that it is adequately meeting the clean energy, energy conservation, and energy efficiency needs of low-income, minority, and other marginalized communities. Further, the Department is directed to consider social equity, workforce development standards, public health effects, and environmental and energy justice in conducting activities across the Department’s programs and to prioritize projects and grantees that advance equity and justice and maximize public health benefits. The Department is directed to improve analytical tools and grantmaking criteria to evaluate the social equity, public health, and environmental and energy justice impacts of technologies and projects and to incorporate these criteria into agency activities. The Department is directed to increase engagement with communities impacted by climate change, air and water pollution, systemic racism and underinvestment, high energy costs, and economic inequality when carrying out this section, designing grant programs, and conducting activities across the Department’s programs. The Department is directed to provide funding to state, local, and tribal government entities, community organizations, businesses, universities, and other entities to advance equity and environmental and energy justice while driving innovation and to integrate this funding across the energy programs. The Department is directed to provide to the Committee not later than 90 days after enactment of this Act a report summarizing its efforts and findings in carrying out the direction contained herein.

The Department is directed to contract with the National Academies of Sciences, Engineering, and Medicine to study the technical and non-technical barriers to and solutions for ensuring equitable distribution of the benefits associated with clean energy in environmental justice communities across all sectors of the economy, and in particular the role of the Department in assessing and mitigating such barriers. In this study, the term “environmental justice community” means a community with significant representation of communities of color, low-income communities, or tribal and indigenous communities, that experiences, or is at risk of experiencing, higher or more adverse human health or environmental effects. Environmental justice communities should be part of the development of the study. The study shall: (1) assess the state of research on the equitable distribution of the benefits of clean energy including workforce development, job creation, and public health benefits; (2) identify key indicators and standards to measure equitable and effective allocation of resources; (3) assess the progress in implementing programs and policies that result in increased adoption of clean energy technologies in environmental justice communities; (4) identify barriers as well as potential incentives and mechanisms to achieving the equitable distribution of the benefits associated with clean energy in environmental justice communities, including through the consideration of social, behavioral, regulatory, policy, market, and technology aspects, and considerations of the characteristics of individual communities, such as geographical location, average income, and racial-ethnic composition; (5) identify mechanisms for ensuring the effective participation of environmental justice communities in decision-making about the transition to a clean energy economy; and (6) recommend research areas for the Department to make progress toward ensuring equitable distribution of the benefits associated with clean energy in environmental justice communities.

The Committee supports the Department’s continuing efforts and progress in implementing the Justice40 Initiative, the energy justice initiative, and Executive Order 14008.

Emissions Reductions

(p. 104) *Emissions Reductions.*—Energy production is a principle contributor to U.S. greenhouse gas emissions. The Committee recognizes the urgent necessity of reducing greenhouse gas emissions to mitigate the impacts of global climate change, as well as the centrality of the power sector to that effort and opportunities for research and development of key technologies at the Department. The Department is encouraged to integrate considerations of climate impacts centrally into all aspects of energy planning and funding. The Department is directed to provide to the Committee not later than 180 days after enactment of this Act a report outlining the Department’s plans to reduce greenhouse gas emissions in line with the United States’ Nationally Determined Contribution under the U.N. Framework Convention on Climate Change.