Energy and Minerals Provisions in the Infrastructure Investment and Jobs Act (P.L. 117-58)

February 16, 2022

Congressional Research Service
https://crsreports.congress.gov
R47034

CRS REPORT
Prepared for Members and
Committees of Congress

Congressional Research Service
Informing the legislative debate since 1914

SUMMARY

R47034

February 16, 2022

Brent D. Yacobucci, Coordinator
Section Research Manager

Energy and Minerals Provisions in the Infrastructure Investment and Jobs Act (P.L. 117-58)

On November 15, 2021, President Biden signed the Infrastructure Investment and Jobs Act (IIJA, P.L. 117-58). This broad infrastructure law addresses a range of issues, including surface transportation, transit, water infrastructure, broadband, and minority business. A portion of the bill, including the majority of Division D, is directed at energy and minerals issues. In many cases, programs provided authorizations of appropriations in the act receive corresponding appropriations in Division J. The IIJA also extends some authorizations of appropriations and expands some programs authorized in the Energy Act of 2020 (P.L. 116-260).

The act appropriates roughly $75.8 billion for energy and minerals-related research, demonstration, technology deployment, and incentives. The bill also appropriates approximately $11.3 billion for the Abandoned Mine Reclamation Fund and approximately $6.42 billion for a carbon reduction program administered by the Department of Transportation (which may include non-energy related greenhouse gas reductions).

Among the categories of topics and programs covered by the law (and corresponding appropriations for FY2022-FY2026):

- energy efficiency and renewable energy—$16.1 billion;
- electric grid reliability, resilience, and cybersecurity—$14.9 billion;
- carbon capture, utilization, and storage (CCUS)—$12.2 billion;
- hydrogen programs—$9.5 billion;
- nuclear energy—$8.5 billion;
- battery manufacturing, recycling, and critical minerals—$7.9 billion; and
- fossil energy programs—$4.7 billion.

In many cases, the IIJA contains similar or identical text to bills or amendments introduced in the 116th and 117th Congresses.

Contents

Figures

Tables

Appendixes

Contacts

On November 15, 2021, President Biden signed the Infrastructure Investment and Jobs Act (IIJA, P.L. 117-58). This broad infrastructure law addresses a range of issues, including surface transportation, transit, water infrastructure, broadband, and minority business. A portion of the bill, including the majority of Division D, is directed at energy and minerals issues. In many cases, programs provided authorizations of appropriations in the act receive corresponding appropriations in Division J.

The IIJA extends and expands authorizations and provides appropriations for several programs enacted in the Energy Act of 2020 (P.L. 116-260). In many cases, the IIJA contains similar or identical text to bills or amendments introduced in the 116th and 117th Congresses.

This report summarizes sections of the IIJA that address energy and/or minerals topics. Energy-related provisions are found throughout the bill, but are concentrated in Division D—Energy. The report is organized by Division and Section in the act, with notes indicating the relevant CRS analyst or specialist for that topic. Provisions unrelated to energy and minerals topics are not included in this report. **Appendix A** includes a table with all appropriations discussed in the report.

Background: Comprehensive Energy Policy

Congress has enacted several broad energy policy laws since the 1970s, most recently the Energy Act of 2020, part of the Consolidated Appropriations Act, 2021 (P.L. 116-260). These laws have addressed a wide range of topics, including energy efficiency in vehicles, appliances, consumer goods, and buildings; development of energy and mineral resources on federal lands; incentives for the production and/or use of renewable energy; limits on export of energy resources; and research and development of advanced energy technologies. Over the past two decades the U.S. energy landscape has changed dramatically, with growing U.S. energy production from natural gas, petroleum, and renewable energy, and a significant decline in coal production and use.

In the 114th and 115th Congresses, the House and Senate considered broad energy legislation. In the 114th Congress, both the House and Senate passed versions of S. 2012, although the Conference Committee did not reach agreement. In the 115th Congress, a related bill, S. 1460, was introduced in the Senate but was not brought to the floor. These bills would have addressed a variety of energy topics, including energy efficiency in federal buildings, data centers, manufacturing facilities, and schools; water conservation and efficiency; electric grid cybersecurity; liquefied natural gas (LNG); grid energy storage; renewable energy; critical minerals; nuclear research and development (R&D); and energy workforce development.

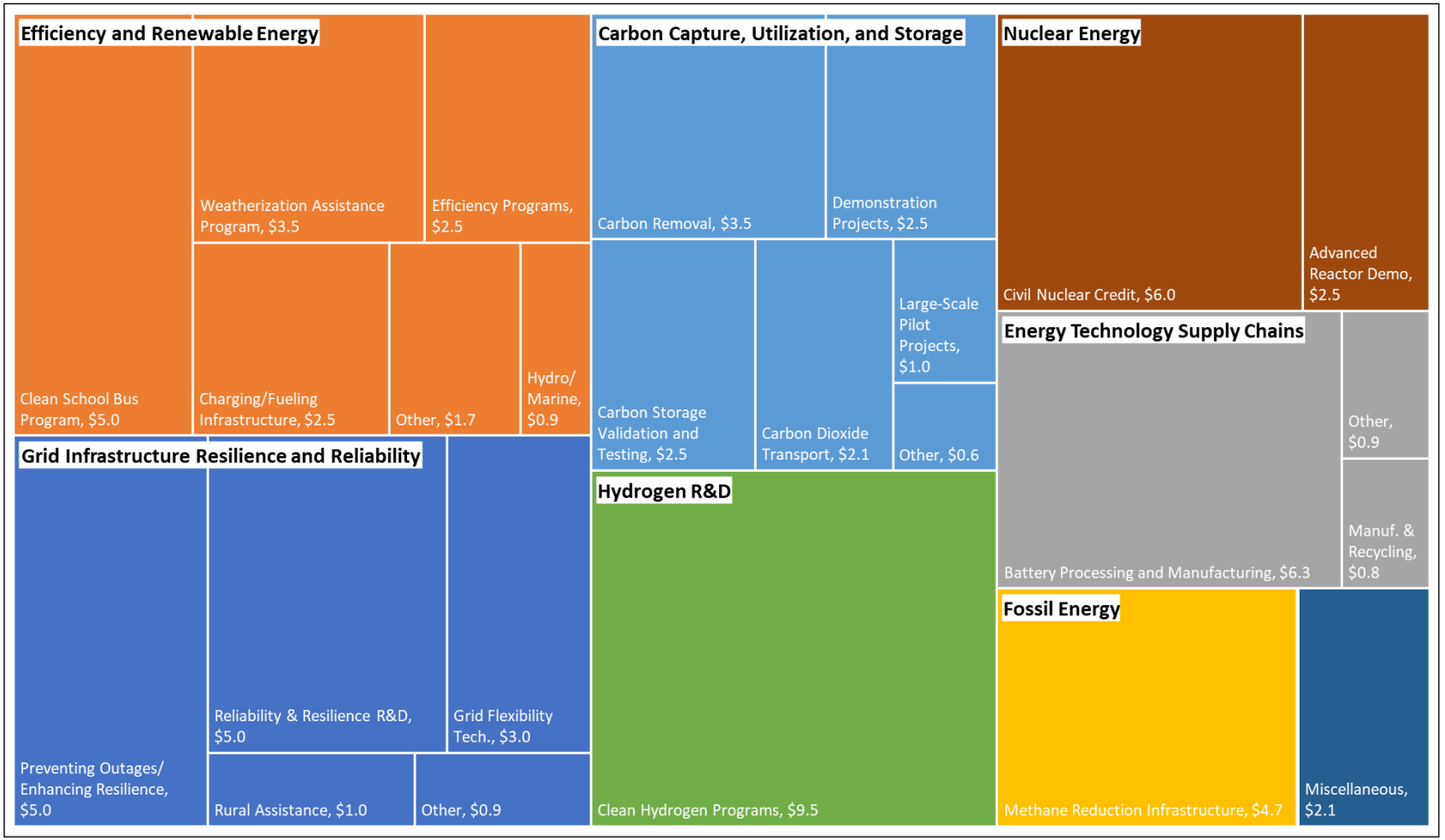
In the 116th Congress, Members of the House and Senate introduced bills on a range of energy topics, many of which were reported by the Senate Committee on Energy and Natural Resources (ENR) and incorporated into a substitute amendment titled the American Energy Innovation Act. That bill was not granted cloture in the Senate. At the end of the 116th Congress, the Energy Act of 2020 was enacted as Division Z of P.L. 116-260. This law included provisions on energy efficiency, advanced nuclear reactors, renewable energy, energy storage, carbon capture and storage, critical minerals, and grid modernization.

The IIJA extends the authorization of appropriations, expands some programs, and appropriates funds for many of the programs in the Energy Act of 2020, as well as establishing new programs for carbon capture, energy efficiency, hydrogen, electric grid modernization, federal energy loans, and incentives for nuclear power.

Funding Overview

The IIJA appropriates approximately $75.8 billion over five years (FY2022-FY2026) for various energy- and minerals-related programs, mostly through the Department of Energy (DOE). (**Figure 1**.) The IIJA appropriates an additional $11.293 for the Abandoned Mine (AML) Reclamation Fund in the Department of the Interior, and approximately $6.42 billion for a Carbon Reduction Program through the Department of Transportation (DOT). Allowable projects for the Carbon Reduction Program include, but are not limited to, energy-related greenhouse gas emissions reductions; non-energy projects are also eligible.

Figure 1. FY2022-FY2026 Energy-Related Appropriations in P.L. 117-58 by Category ($ billions)



Source: CRS analysis of P.L. 117-58.

Notes: Excludes $11.293 billion for the AML Reclamation Fund and $6.42 billion for the DOT Carbon Reduction Program, which may fund non-energy projects. R&D denotes research and development. Manuf. denotes manufacturing.

Division A—Surface Transportation

Title I—Federal-Aid Highways

Subtitle D—Climate Change

Sec. 11401. Grants for charging and fueling infrastructure[1]

This section establishes a new grant program within the Department of Transportation (DOT) for the strategic deployment of publicly accessible alternative fuel (AF) infrastructure (i.e., electric vehicle (EV) charging and hydrogen, propane [for exclusive use by medium- and heavy-duty vehicles], and natural gas fueling) along designated AF corridors. Eligible entities (e.g., state and local governments, public transportation authorities) receiving grants may establish partnerships with private entities (i.e., corporations, partnerships, companies, nonprofit organizations) to acquire and install AF infrastructure and for other related purposes. Designation of AF corridors requires consultation with any affected Indian tribes. In addition, each fiscal year, 50% of allocated funds is designated for community grants for projects aimed at reducing greenhouse gas (GHG) emissions or increasing access to publicly accessible AF infrastructure. Projects within rural areas, low- and moderate-income communities, and communities with lower rates of private parking spaces or higher rates of multi-unit dwellings are given priority.

Section 11101(b)(1)(C) provides a total of approximately $2.5 billion for the period of FY2022-FY2026[2] from the Highway Trust Fund.[3]

Sec. 11402. Reduction of truck emissions at port facilities[4]

This section establishes a grant program to reduce emissions at port facilities by reducing truck idling, increasing port electrification, and other projects. The federal share of each grant may not exceed 80%.

Division J, Title VIII provides appropriations of $150 million for the period of FY2022-FY2026.

Sec. 11403. Carbon reduction program.[5]

This section establishes a carbon reduction program within DOT under the Federal-Aid Highway Program aimed at reducing on-highway sources of carbon dioxide emissions. From monies apportioned to the states from the Highway Trust Fund, states may use funds for various emissions reduction projects, including truck stop electrification; facilities for pedestrians, bicyclists, and other non-motorized transportation; energy-efficient street lights and traffic controls; and alternative fuel vehicle deployment, among others. States are also required to develop and submit to DOT a strategy to reduce transportation emissions in the state. Because the

[1] Prepared by Melissa N. Diaz, Analyst in Energy Policy. For more information on electric vehicle infrastructure, see CRS Report R45747, *Vehicle Electrification: Federal and State Issues Affecting Deployment*, by Bill Canis, Corrie E. Clark, and Molly F. Sherlock.

[2] U.S. Department of Transportation (DOT), Federal Highway Administration (FHWA), *Highway Authorizations Under the Bipartisan Infrastructure Law*, January 25, 2022, https://www.fhwa.dot.gov/bipartisan-infrastructure-law/funding.cfm.

[3] For more information, see CRS Report R47022, *Federal Highway Programs: In Brief*, by Robert S. Kirk.

[4] Prepared by Brent D. Yacobucci, Specialist in Energy Policy.

[5] Prepared by Brent D. Yacobucci, Specialist in Energy Policy.

program targets emissions as opposed to energy consumption, specifically, some of the projects under this program many not be energy-related.

Section 11101(a) provides a total of approximately $273.2 billion from the Highway Trust Fund for FY2022-FY2026 for programs under the Federal-Aid Highway Program. Of those funds, Section 11108(a)(2)(A) directs an estimated $6.42 billion to the carbon reduction program.[6]

Subtitle E—Miscellaneous

Sec. 11506(e). Appalachian Regional Energy Hub Initiative[7]

Section 11506(e) amends the Appalachian Regional Development Act of 1965 (P.L. 89-4) to add "§14511. Appalachian regional energy hub initiative." The act gives the Appalachian Regional Commission the authority to provide technical assistance to, grants to, or enter into contracts with people or entities for projects and activities to study the economic impact on the region of an ethane storage hub. Specifications are given regarding the activities and locations of the work.

Appropriations are authorized at $5 million annually for FY2022-FY2026. Appropriations totaling $200 million annually are provided for the Appalachian Regional Commission by Division J, Title III, for the period of FY2022-FY2026; funding for the hubs is not specified in Division J.

Division B—Surface Transportation Investment Act of 2021

Title V—Research and Innovation

Sec. 25006. Electric vehicle working group.[8]

The Secretaries of Transportation and Energy are directed to establish a working group to produce three reports over a period of six years describing the status of EV adoption and identifying barriers, opportunities, and recommendations. The working group is directed to submit the reports to the Secretaries; the Senate Committees on Commerce, Science, and Transportation and Appropriations; and the House Committees on Transportation and Infrastructure and Appropriations. The Secretaries are directed to use these reports in developing a strategy for EV adoption and deployment. The working group is to have no more than 25 members representing diverse perspectives from federal stakeholders, industry stakeholders, and other nonfederal stakeholders (e.g., public utilities, state and local governments).

No funds are authorized or appropriated for this working group.

[6] FHWA, *Highway Authorizations Under the Bipartisan Infrastructure Law*.

[7] Prepared by Michael Ratner, Specialist in Energy Policy.

[8] Prepared by Melissa N. Diaz, Analyst in Energy Policy. For more information on EV technology, see CRS Report R46231, *Electric Vehicles: A Primer on Technology and Selected Policy Issues*, by Melissa N. Diaz. For information on federal EV programs and legislation, see CRS Report R46864, *Alternative Fuels and Vehicles: Legislative Proposals*, by Melissa N. Diaz.

Division D—Energy

Title I—Grid Infrastructure and Resiliency

Subtitle A—Grid Infrastructure and Reliability[9]

With climate change concerns, natural disasters, and recent instances of wildfires and extreme weather affecting the electric grid, some observers have recommended improvements to harden the grid and improve recovery from disruptive events.

Sec. 40101. Preventing outages and enhancing the resilience of the electric grid.

Section 40101 requires the Secretary of Energy to establish a program to make grants to eligible electric industry entities, states, and Indian tribes to supplement hardening activities to reduce the likelihood and consequences of disruptive events, including natural disasters, to the electric grid. Grant recipients are required to detail in their application how the grant will assist the entities' efforts against disruptive events, and grants are not to exceed the amounts entities have spent in the previous three years. About 30% of the grant amount is to be set aside for small utilities (with under 4 million megawatt-hours (MWh) in sales). Grant awards are also to be based on the "greatest community benefit (whether rural or urban) in reducing the likelihood and consequences of disruptive events." A matching requirement for states and Indian tribes of 15% is required. Technical assistance is to be offered for "activities, technologies, equipment, and hardening measures" to reduce potential disruptive events. DOE shall submit a report to Congress not later than two years after the date of enactment of the act, and every two years thereafter to 2026.

Appropriations totaling $5 billion are provided by Division J, Title III, for the period of FY2022-FY2026.

Sec. 40102. Hazard mitigation using disaster assistance.

The Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. §5170c(f)(12)) is amended to include eligibility for wildfires, and to add "fire-resistant wires and infrastructure and the undergrounding of wires'' as mitigation measures. This section applies to the Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant Program (HMGP), which is funded through the Disaster Relief Fund (DRF). HMGP funding is available, when authorized by a Presidential Major Disaster Declaration (or a Fire Management Assistance declaration), to all areas of a state, tribal lands, or territory requested by the governor or tribal executive.[10]

Sec. 40103. Electric grid reliability and resilience research, development, and demonstration.

Section 40103 requires the Secretary of Energy to establish the ''Program Upgrading Our Electric Grid and Ensuring Reliability and Resiliency.'' This program is to competitively provide cost-shared financial assistance to eligible entities (including utilities, states and state entities, and Indian tribes) to demonstrate innovative approaches to harden and enhance resilience and reliability of electric infrastructure, and to demonstrate new approaches to enhance regional grid resilience.

[9] Prepared by Richard J. Campbell, Specialist in Energy Policy, unless otherwise noted.

[10] For more information on HMGP, see CRS Report R46989, *FEMA Hazard Mitigation: A First Step Toward Climate Adaptation*, by Diane P. Horn.

Appropriations totaling $5 billion are provided by Division J, Title III, for the period of FY2022-FY2026.

Section 40103 also requires the Secretary of Energy to provide federal financial assistance to rural or remote areas to improve the cost-effectiveness of energy generation, transmission, and distribution; site or upgrade transmission and distribution facilities; reduce greenhouse gas emissions from energy generation; provide or modernize electric generation facilities; develop microgrids; and increase energy efficiency.

Appropriations totaling $1 billion are provided by Division J, Title III, for the period of FY2022-FY2026.

Section 40103 also requires the Secretary of Energy, in collaboration with the Secretary of Homeland Security, the Federal Energy Regulatory Commission (FERC), the North American Electric Reliability Corporation (NERC), and other energy infrastructure stakeholders, to develop an Energy Infrastructure Resilience Framework. This framework is to develop common analytical frameworks, tools, metrics, and data to assess the resilience, reliability, safety, and security of energy infrastructure in the United States, including the development and storage of "an inventory of easily transported high-voltage recovery transformers and other required equipment." A detailed assessment report on details of the framework shall be submitted to Congress no later than 180 days after enactment of the act.

Sec. 40104. Utility demand response.

Demand response programs generally allow electric utility customers to reduce their use of electricity from their local utility and receive compensation during periods of high demand for electricity.[11]

Section 111(d) of the Public Utility Regulatory Policies Act of 1978 (PURPA, 16 U.S.C. §2621(d)), as amended, requires state regulatory authorities to consider the implementation of certain standards. Per Section 111(a), each state regulatory authority and each nonregulated electric utility shall consider each standard established by Section 111(d) and make a determination concerning whether or not it is appropriate to implement such standard. State electricity regulators (i.e., state public utility commissions) "must consider," for their regulated electric utilities (usually but not always only investor-owned utilities), whether or not to adopt the standards as requirements on those electric utilities. Note that PURPA requires that its "states-must-consider" provisions apply only to electric utilities over a certain minimum size threshold (42 U.S.C. §2612). States are not required to implement these provisions, only to consider their implementation.

Section 40104(a) amends PURPA to allow state regulatory authorities to consider "establishing rate mechanisms allowing an electric utility with respect to which the State regulatory authority has ratemaking authority to timely recover the costs of promoting demand-response and demand flexibility practices." State authorities are given one year to set a hearing for consideration, and a further year to complete the consideration. The requirement for a hearing process does not apply if a state has already considered whether or not to institute this or a similar demand response program.

Section 40104(b) amends Section 362(d) of the Energy Policy and Conservation Act (EPCA, 42 U.S.C. §6322(d)) to add demand response technologies and practices under optional features of State Energy Conservation Plans.

[11] For more on demand response, please see CRS Report R43093, *Electricity Markets—Recent Issues in Market Structure and Energy Trading*, by Richard J. Campbell.

Section 40104(c) amends paragraph (i) of the National Energy Conservation Policy Act (42 U.S.C. §8253(i)), on federal energy and water management requirements, to add reduction of energy consumption during periods of unusually high electricity or natural gas demand, and under paragraph 3(A) to promote the installation of demand-response technology, and the use of demand-response practices in federal buildings.

Section 40104(d) amends Section 422(d)(3) of the Energy Independence and Security Act of 2007 (EISA, 42 U.S.C. §17082(d)) addressing the Components of Zero-Net-Energy Commercial Buildings Initiative by inserting ‘‘(including demand-response technologies, practices, and policies)’’ after ‘‘policies.’’

Sec. 40105. Siting of interstate electric transmission facilities.

Siting of electric transmission lines can be a long process involving multiple states and jurisdictions, each with its own regulatory processes. FERC does not have the authority to order siting of a transmission line, except under limited circumstances involving the designation of a National Interest Electric Transmission Corridor (NIETC). Section 40105 essentially augments FERC’s “backstop” siting authority in an NIETC.[12]

Section 40105 amends Section 216(a) of the Federal Power Act (16 U.S.C. §824p(a)) for the designation of NIETCs to add consultation with Indian tribes in addition to states, and transmission capacity constraints as factors considered along with congestion for DOE to conduct a study. These studies are to be conducted, and a report issued “not less frequently less frequently than once every 3 years.” Among new considerations added to the Secretary’s determination of whether to designate an NIETC are whether the designation would enhance the ability of facilities that generate or transmit firm or intermittent energy to connect to the electric grid, or would maximize the use of existing rights-of-way, or whether the designation would result in a reduction in the cost to purchase electric energy for consumers.

Section 216(b) of the Federal Power Act (16 U.S.C. §824p(b)) for construction permits is also amended to allow consideration of interregional as well as interstate benefits. Subparagraph (C) is replaced by a provision that allows FERC to approve a construction permit for an electric transmission project when a state or other entity with authority has not made a determination on an application in an NIETC after one year. FERC may also approve a constriction permit when a state or entity has conditioned its approval in such a manner that the proposed construction or modification will not significantly reduce transmission capacity constraints or congestion in interstate commerce or is not economically feasible; or the state or entity has denied an application seeking approval pursuant to applicable law.

Contiguous states continue to be encouraged to form interstate compacts for facilitation of transmission projects. However, Section 216(i) of the Federal Power Act (16 U.S.C. §824p(i)), allowing interstate compacts for transmission projects, is modified. If the members are in disagreement over an application one year after it is filed, or if the Secretary of Energy determines that members of a compact are in disagreement one year after a NIETC is designated, then FERC will have the authority to issue a permit for the construction or modification of an electric transmission facility in a state that is a party to a compact.

[12] For more information on the topic, please see CRS In Focus IF11411, *The Legal Framework of the Federal Power Act*, by Adam Vann, and CRS Insight IN11821, *IIJA: Efforts to Address Electric Transmission for Reliability, Resilience, and Renewables*, by Richard J. Campbell.

Sec. 40106. Transmission facilitation program.

Building electric transmission lines can be a long process, with states generally having the authority to propose routes and condemn property needed to site transmission lines.

Section 40106 establishes the ‘‘Transmission Facilitation Program,’’ under which the Secretary of Energy shall facilitate the construction of electric power transmission lines and related facilities. A “Transmission Facilitation Fund” will be used for to help finance eligible projects. These eligible projects would be deemed to be in the public interest, and include construction of a new or replacement electric power transmission line, a project to increase the transmission capacity of an existing eligible electric power transmission line, or a project to connect an isolated microgrid to an existing transmission, transportation, or telecommunications infrastructure corridor located in Alaska, Hawaii, or a territory of the United States. To facilitate eligible projects, the Secretary may enter into a capacity contract (for no more than 40 years or 50% of the total capacity) with respect to an eligible project; issue a loan to an eligible entity for an eligible project; or participate with an eligible entity in designing, developing, constructing, operating, maintaining, or owning an eligible project. Amounts loaned to entities for eligible projects are to be repaid through project revenues. Eligible projects are to be separate from pending projects of the Western Area Power Administration or the Bonneville Power Administration.

The U.S. Treasury is authorized to make loans to the Secretary for the purpose of the Transmission Facilitation Program up to $2.5 billion in outstanding repayable balances.

Appropriations totaling $50 million are provided by Division J, Title III, for the period of FY2022-FY2026.

Sec. 40107. Deployment of technologies to enhance grid flexibility.

Section 40107 amends Section 1306 of EISA (42 U.S.C. §17386) to add technologies and applications eligible for the Smart Grid Investment Matching Grant Program. Technology areas added as eligible include those that improve data analytics and communications on transmission line conditions; improve system extreme weather or natural disaster resilience; improve the ability to rebalance the grid autonomously; or facilitate the aggregation or integration of distributed generation and demand response, renewable energy resources, electric vehicle charging infrastructure, and vehicle-to-grid technologies.

Appropriations totaling $3 billion are provided by Division J, Title III, for the period of FY2022-FY2026.

Sec. 40108. State energy security plans.

Section 40108 amends Part D of Title III of EPCA (42 U.S.C. §§6321 et seq.) to provide financial and technical assistance to states for state energy security planning. These plans are to assess the existing circumstances in the state. The State Energy Security Plan is to propose methods to strengthen the ability of the state (in consultation with owners and operators of energy infrastructure) to secure the energy infrastructure against all physical and cybersecurity threats; mitigate the risk of energy supply disruptions; and to ensure that the state has reliable, secure, and resilient energy infrastructure. States may request information (subject to protection of that information) and technical assistance from DOE and the Department of Homeland Security (DHS) for their plans. Financial assistance (that supplements but does not supplant state funding) to states to accomplish this section is conditioned on annual submissions of these plans to the Secretary of Energy.

Sec. 40109. State energy program.[13]

The State Energy Program (SEP) provides funding and technical assistance to states, the District of Columbia, and U.S. territories to promote the efficient use of energy and reduce the rate of growth of energy demand through the development and implementation of specific state energy programs. DOE administers the SEP, which is authorized under Part D of EPCA (42 U.S.C. §§6321 et seq.). EPCA Section 362 specifies mandatory features and optional features of state energy plans in order to be eligible for financial assistance through the SEP.

Section 40109 of the IIJA amends the mandatory features and optional features for financial assistance. Mandatory features are expanded to include activities to support transmission and distribution planning. Optional features are amended by making changes to a provision related to programs that increase transportation efficiency. Previously, the provision included programs that accelerate alternative fuels. Section 40109 expands the options to include programs to help reduce carbon emissions in the transportation sector by 2050, accelerate the use of alternative transportation fuels, and accelerate transportation electrification. Section 40109 also expands the optional program focus to "state government vehicles, fleet vehicles, taxis and ridesharing services, mass transit, school buses, ferries, and privately owned passenger and medium- and heavy-duty vehicles."

Appropriations totaling $500 million for SEP are provided by Division J, Title III, for the period of FY2022-FY2026. Section 40109 specifies that the distribution of funds to states shall be according to the formula in effect on January 1, 2021, and that there is not a cost-share requirement associated with these funds.

Sec. 40110. Power marketing administration transmission borrowing authority.

The federal government, through DOE, operates four regional power marketing administrations (PMAs), including the Bonneville Power Administration. Each PMA operates in a distinct geographic area.[14]

Section 40110 makes available an additional $10 billion in borrowing authority to implement the authority of the Administrator of the Bonneville Power Administration under the Federal Columbia River Transmission System Act (16 U.S.C. §838 et seq.) to remain outstanding at any one time, but shall not exceed $6 billion by FY2028. Any additional Treasury borrowing authority received under this section shall be fully repaid to the Treasury in a manner consistent with the applicable self-financed federal budget accounts.

Sec. 40111. Study of codes and standards for use of energy storage systems across sectors.

The Secretary of Energy shall conduct a study of types and commercial applications of codes and standards applied to (1) stationary energy storage systems; (2) mobile energy storage systems; and (3) energy storage systems that move between stationary and mobile applications, such as electric vehicle batteries or batteries repurposed for new applications. The Secretary shall conduct the study in consultation with all relevant standards-developing organizations and other entities with relevant expertise. The purpose of the study, among other goals, is to identify barriers, foster collaboration, and increase conformity across sectors for energy storage technologies and systems, with a report due to Congress not later than 18 months after the date of enactment the IIJA.

[13] Prepared by Corrie E. Clark, Specialist in Energy Policy.

[14] For more information on PMAs, please see CRS Report R45548, *The Power Marketing Administrations: Background and Current Issues*, by Richard J. Campbell.

Sec. 40112. Demonstration of electric vehicle battery second-life applications for grid services.[15]

Section 40112 amends the energy storage demonstration pilot grant program authorized by Section 3201(c) of the Energy Act of 2020 (Division Z of P.L. 116-260). Of the three energy storage demonstration projects authorized, Section 40112 requires that one project demonstrate second-life applications (or the repurposing) of electric vehicle batteries to provide services to the electric grid. In selecting a project, DOE is to prioritize projects where increased resiliency and lower energy costs could benefit a facility or facilities including multi-family affordable housing, senior care, and community health.

Appropriations totaling $355 million for the energy storage demonstration pilot grant program are provided in Division J, Title III, for the Office of Clean Energy Demonstrations.

Sec. 40113. Columbia Basin power management.

Section 40113(b) establishes an account for the purposes of making expenditures to increase two-way transfers of renewable electric generation between the western United States and Canada. This account is for the Administrator of the Bonneville Power Administration to improve electric power system coordination by constructing electric power transmission facilities within the western United States that directly or indirectly facilitate non-carbon-emitting electric power transactions between the western United States and Canada.

Section 40113(c) authorizes a nonreimburseable appropriation of $100 million for the Bureau of Reclamation (an agency within the Department of the Interior) for rehabilitation and enhancement of the John W. Keys Pump Generating Plant. These expenditures would normally be paid for by power users. Division J provides no appropriated funds for this section.

Section 40113(d) also requires the Administrator of the Bonneville Power Administration, in coordination with other specified entities, to conduct a study considering the potential hydroelectric power value to the Pacific Northwest of increasing the coordination of the operation of hydroelectric and water storage facilities on rivers located in the United States and Canada. A nonreimburseable appropriation is authorized of $10 million to carry out this subsection. Division J provides no appropriated funds.

Subtitle B—Cybersecurity[16]

Cyberattacks are practically a daily occurrence for many U.S. companies and institutions. In this context, cybersecurity has risen as a concern for the integrity and reliability of the grid. The resources used to provide electricity are also shifting from fossil-fueled central power stations to distributed generation using renewable sources of electricity. Added to this are an increasing number of Internet of Things (IoT) devices and electric vehicles being connected to the grid, increasing the number of points to secure and thereby the potential cybersecurity risks to the system. For more information, see CRS Report R46959, *Evolving Electric Power Systems and Cybersecurity*.

Sec. 40121. Enhancing grid security through public-private partnerships.

Section 40121 requires the Secretary of Energy, in coordination with the Secretary of Homeland Security and in consultation with, as the Secretary determines to be appropriate, the heads of other relevant federal agencies, state regulatory authorities, industry stakeholders, and the Electric

[15] Prepared by Corrie E. Clark, Specialist in Energy Policy.

[16] Prepared by Richard J. Campbell, Specialist in Energy Policy.

Reliability Organization, to carry out a program to promote and advance the physical security and cybersecurity of electric utilities. Among other goals, this program is to develop, and provide for voluntary implementation of, maturity models, self-assessments, and auditing methods for assessing the physical security and cybersecurity of electric utilities; assist with threat assessment and cybersecurity training for electric utilities; provide training to electric utilities to address and mitigate cybersecurity supply chain management risks; assist electric utilities that own defense-critical electric infrastructure; and recommend and implement engineering protections to ensure continued operations of identified critical functions. The Secretary shall take into consideration the different sizes of electric utilities and the regions that electric utilities serve, and is to prioritize electric utilities with fewer available resources due to size or region. To the extent practicable, the program is to use and leverage existing DOE, DHS, and other existing federal agency programs.

Section 40121 also requires the Secretary of Energy, in coordination with the Secretary of Homeland Security, to issue a report on the Cybersecurity of Distribution Systems, not later than one year after the date of enactment of the IIJA. Among other factors, the report shall assess priorities, policies, procedures, and actions for enhancing the physical security and cybersecurity of electricity distribution systems, including behind-the-meter generation,[17] storage, and load management devices. As the Secretary determines to be appropriate, the report is to be written in consultation with the heads of other federal agencies, state regulatory authorities, and industry stakeholders, in estimating the potential costs and benefits of implementing the priorities, policies, procedures assessed, and assess any public-private cost-sharing opportunities.

Sec. 40122. Energy Cyber Sense program.

Section 40122 requires the Secretary of Energy, in coordination with the Secretary of Homeland Security and in consultation with the heads of other relevant federal agencies, to establish a voluntary Energy Cyber Sense program to test the cybersecurity of products and technologies intended for use in the energy sector, including in the bulk-power system. Among other factors, the program shall establish a testing process under the program to test the cybersecurity of products and technologies intended for use in the energy sector, including products relating to industrial control systems and operational technologies; establish and maintain cybersecurity vulnerability reporting processes and a related database that are integrated with federal vulnerability coordination processes; provide technical assistance to electric utilities, product manufacturers, and other energy sector stakeholders to develop solutions to mitigate identified cybersecurity vulnerabilities in products and technologies tested under the program; and biennially review products and technologies tested under the program for cybersecurity vulnerabilities and provide analysis with respect to how those products and technologies respond to and mitigate cyber threats. The program is also to consider incentives to encourage the use of analysis and results of testing under the program in the design of products and technologies for use in the energy sector.

Sec. 40123. Incentives for advanced cybersecurity technology investment.

Section 40123 amends the Federal Power Act, adding after Section 219 (16 U.S.C. §824s) a new section to require a study by the Federal Energy Regulatory Commission (FERC) to identify incentive-based, including performance-based, rate treatments for the transmission and sale of electric energy that could be used to encourage investments in advanced cybersecurity

[17] "Behind-the-meter generation refers to a variety of technologies that generate electricity at or near where it will be used ... including solar panels, batteries, gas or diesel generators, fuel cells, and combined heat and power systems." AEP Energy, *Behind-the-Meter Generation: Is It for You?*, July 19, 2019, https://www.aepenergy.com/blog/behind-the-meter-generation-is-it-for-you/.

technology, and cybersecurity threat sharing information programs. The study is to be conducted in consultation with the Secretary of Energy, NERC, the Electricity Subsector Coordinating Council (ESCC), and the National Association of Regulatory Utility Commissioners (NARUC).

The term "advanced cybersecurity technology" means any technology, operational capability, or service, including computer hardware, software, or a related asset, that enhances the security posture of public utilities through improvements in the ability to protect against, detect, respond to, or recover from a cybersecurity threat (as defined in Section 102 of the Cybersecurity Act of 2015 (6 U.S.C. §1501)).

In issuing a rule pursuant to this section, if FERC determines that an investment in advanced cybersecurity technology or information sharing program costs will reduce cybersecurity risks to defense critical electric infrastructure (as defined in the Federal Power Act Section 215A(a)), or other facilities subject to FERC jurisdiction that are critical to public safety, national defense, or homeland security, FERC may provide additional incentives.

Sec. 40124. Rural and municipal utility advanced cybersecurity grant and technical assistance program.

Section 40124 requires the Secretary of Energy, in coordination with the Secretary of Homeland Security and in consultation with the FERC, NERC, and ESCC, to establish a program, the ''Rural and Municipal Utility Advanced Cybersecurity Grant and Technical Assistance Program,'' to provide grants and technical assistance to, and enter into cooperative agreements with, eligible entities to protect against, detect, respond to, and recover from cybersecurity threats. The objectives of the program shall be (1) to deploy advanced cybersecurity technologies for electric utility systems; and (2) to increase the participation of eligible entities in cybersecurity threat information sharing programs.

Eligible entities include rural electric cooperatives; utilities owned by a political subdivision of a state, such as a municipally owned electric utility; a utility owned by any agency, authority, corporation, or instrumentality of one or more political subdivisions of a state; or a not-for-profit entity that is in a partnership with no fewer than six of these entities. An investor-owned electric utility that sells less than 4 million MWh of electricity per year is also an eligible entity.

In awarding grants under the program, the Secretary shall give priority to an eligible entity that (a) has limited cybersecurity resources; (b) owns assets critical to the reliability of the bulk-power system; or (c) owns defense-critical electric infrastructure (as defined in Section 215A(a) of the Federal Power Act (16 U.S.C. §824o–1(a))).

Appropriations totaling $250 million are provided by Division J, Title III, for the period of FY2022-FY2026.

Sec. 40125. Enhanced grid security.

Section 40125(b) requires the Secretary of Energy, in coordination with the Secretary of Homeland Security and in consultation with other federal agencies as determined appropriate, the energy sector, the states, Indian tribes, tribal organizations, territories or freely associated states, and other stakeholders, to develop and carry out a research, development, and demonstration program for cybersecurity for the energy sector to (a) develop advanced cybersecurity applications and technologies for the energy sector, and (b) leverage electric grid architecture as a means to assess risks to the energy sector, including by implementing an all-hazards approach to communications infrastructure, control systems architecture, and power systems architecture. Among other goals, the program is to perform pilot demonstration projects with the energy sector, develop workforce development curricula for energy sector-related cybersecurity, and develop

improved supply chain concepts for secure design of emerging digital components and power electronics.

Appropriations totaling $250 million for Subsection (b) are provided by Division J, Title III, for the period of FY2022-FY2026.

Section 40125(c) states that the Secretary of Energy may develop and carry out a program for operational support for cyberresilience to enhance and periodically test DOE's emergency response capabilities, and DOE's coordination with other agencies, the national laboratories, and private industry. This program is also to expand DOE's cooperation with the intelligence community for energy sector-related threat collection and analysis, enhance DOE's tools and the Electricity Information Sharing and Analysis Center (E-ISAC) for monitoring the status of the energy sector, expand industry participation in E-ISAC, and provide technical assistance to small electric utilities for purposes of assessing and improving cybermaturity levels and addressing gaps identified in the assessment.

Appropriations totaling $50 million for Subsection (c) are provided by Division J, Title III, for the period of FY2022- FY2026.

Section 40125(d) requires the Secretary of Energy, in coordination with the Secretary of Homeland Security, to develop and carry out an advanced energy security program for modeling and assessing energy infrastructure risk to secure energy networks, including electric and natural gas networks, and oil exploration, transmission, and delivery networks. Among other goals, the program will develop capabilities to identify vulnerabilities and critical components that pose major risks to grid security if destroyed or impaired; provide modeling at the national level to predict impacts from natural or human-made events; add physical security to the cybersecurity maturity model; conduct exercises and assessments to identify and mitigate vulnerabilities to the electric grid, including providing mitigation recommendations; and conduct research on hardening solutions for critical components of the electric grid.

Appropriations totaling $50 million for Subsection (d) are provided by Division J, Title III, for the period of FY2022- FY2026.

Sec. 40126. Cybersecurity plan.

Section 40126 states that the Secretary of Energy may, as the Secretary determines appropriate, direct a recipient of any award or other funding under this division to (1) submit to the Secretary, prior to the issuance of the award or other funding, a cybersecurity plan that demonstrates the cybersecurity maturity of the recipient in the context of the project for which that award or other funding was provided, and (2) establish a plan for maintaining and improving cybersecurity throughout the life of the proposed solution of the project.

Sec. 40127. Savings provision.

Nothing in this subtitle affects the authority, existing on the day before the date of enactment of the IIJA, of any other federal department or agency, including the authority provided to the Secretary of Homeland Security and the Director of the Cybersecurity and Infrastructure Security Agency in Title XXII of the Homeland Security Act of 2002 (6 U.S.C. §§651 et seq.).

Title II—Supply Chains for Clean Energy Technologies[18]

Sec. 40201. Earth Mapping Resources Initiative.[19]

Section 40201 establishes the "Earth Mapping Resources Initiative" within the U.S. Geological Survey (USGS), with the purpose of accelerating efforts to provide integrated topographic, geologic, geochemical, and geophysical mapping; accelerating the integration and consolidation of geospatial and resource data; and providing interpretation of subsurface and above-ground mineral resources data. This initiative shall complete a modern map and data integration effort on the full range of minerals (including mine waste sites).

Appropriations totaling $320 million for this section are provided by Division J, Title VI.

Sec. 40202. National Cooperative Geologic Mapping Program.[20]

Section 40202 amends 43 U.S.C. §31c(d) by adding an abandoned mine land and waste component to the National Cooperative Geologic Mapping Program.

This section extends authorized appropriations of $64 million for the program, new component, and related activities, for each fiscal year through 2031. Division J provides no appropriated funds.

Sec. 40203. National Geological and Geophysical Data Preservation Program.[21]

Section 40203 amends 42 U.S.C. §15908(b) to authorize the National Geological and Geophysical Data Preservation Program to provide for the preservation of samples to track geochemical signatures from critical mineral ore bodies for use in provenance tracking frameworks.

Section 41003 of the IIJA authorizes to be appropriated $8.7 million for this program in fiscal year 2022, and $5 million for each of fiscal years 2023, 2024, and 2025. Appropriations totaling $23.7 million for Section 40203 are provided through Section 41003 by Division J, Title VI.

Sec. 40204. USGS energy and minerals research facility.[22]

Section 40204 directs the USGS to cooperatively fund, with an academic partner, a facility to support energy and minerals research and appurtenant associated structures.

Appropriations totaling $167 million for this section are provided by Division J, Title VI.

Sec. 40205. Rare earth elements demonstration facility.[23]

Section 40205 amends 42 U.S.C. §13344, directing the Secretary of Energy to fund, with an academic partner, a facility to demonstrate the commercial feasibility of a full-scale integrated rare earth element extraction and separation facility and refinery. The facility is to provide environmental benefits through the use of feedstock derived from acid mine drainage, mine

[18] Prepared by Brandon S. Tracy, Analyst in Energy Policy, unless otherwise noted.

[19] For more information on this topic, see Anna E. Normand, Analyst in Natural Resources Policy.

[20] For more information on this topic, see Anna E. Normand, Analyst in Natural Resources Policy.

[21] For more information on this topic, see Anna E. Normand, Analyst in Natural Resources Policy.

[22] For more information on this topic, see Anna E. Normand, Analyst in Natural Resources Policy.

[23] For more information, see CRS Report R46618, *An Overview of Rare Earth Elements and Related Issues for Congress*, by Brandon S. Tracy.

waste, or other deleterious material. The facility is to be able to separate and refine mixed rare earth oxides into pure oxides and metals of each rare earth element.

Appropriations totaling $140 million for this section are provided by Division J, Title III.

Sec. 40206. Critical minerals supply chains and reliability.[24]

Section 40206 directs the Bureau of Land Management (BLM) and the Forest Service (FS) to complete the federal permitting and review processes related to critical mineral mines on federal lands with maximum efficiency and effectiveness by establishing and adhering to schedules related to various steps in the permitting process. Section 40206 also requires that reports related to the permitting process and improvements be submitted to Congress.

Sec. 40207. Battery processing and manufacturing.

Section 40207 directs the Secretary of Energy to establish five grant programs and to continue one prize competition, in addition to other provisions.

Appropriations totaling $6,135 million for this section are provided by Division J, Title III, with specific amounts for each program discussed below.

The Secretary is directed to establish the ‘‘Battery Material Processing Grant Program’’ within the Office of Fossil Energy and Carbon Management. This program is to issue grants for the support, construction, and improvement of battery material processing demonstration projects and facilities. Division J, Title III, appropriates $3 billion for this program.

The Secretary is directed to establish a battery manufacturing and recycling grant program in the Office of Energy Efficiency and Renewable Energy. This program is to issue grants for the support, construction, and improvement of battery component manufacturing and recycling demonstration projects and facilities. Division J, Title III, appropriates $3 billion for this program.

The Secretary, in coordination with the EPA Administrator, is required to award grants for research, development, and demonstration projects to increase the reuse and recycling of batteries (example areas include, among others: recycling; reuse and recovery of components, materials, and minerals; increasing consumer acceptance of recycling; mitigation and disposal of waste materials; process optimization). Provisions in this section authorize to be appropriated $60 million for these grants.

The Secretary, in coordination with the EPA Administrator, is directed to establish a grant program for states and units of local government, to assist with battery collection, recycling, and reprocessing. Provisions in this section authorize to be appropriated $50 million for this program.

The Secretary is required to award grants to retailers to establish collection systems for the reuse, recycling, or proper disposal of covered batteries and products. Provisions in this section authorize to be appropriated $15 million for these grants.

Appropriations of $125 million for the previous three activities are provided by Division J, Title III.

The Secretary shall also continue to carry out the Lithium-Ion Battery Recycling Prize Competition (Phase III). Division J, Title III, appropriates $10 million for this competition.

[24] For more information, see CRS Report R46278, *Policy Topics and Background Related to Mining on Federal Lands*, by Brandon S. Tracy.

The Secretary is required to convene a task force to develop an extended battery producer responsibility framework to address battery recycling goals, mandatory recycling, product design, collection models, transportation of collected materials, and related regulations.

Sec. 40208. Electric drive vehicle battery recycling and second-life applications program.

Section 40208 amends 42 U.S.C. §17231(k), directing the Secretary of Energy to establish a research, development, and demonstration program for electric drive vehicle battery recycling and second-life applications. This program, among other activities, shall award grants for solutions and projects to increase electric drive vehicle battery recycling and second-use, including the recovery of critical minerals, product designs that facilitate recycling, consumer participation in recycling, and applications for uses outside the automotive industry, among others.

The Secretary shall report to the Senate Committee on Energy and Natural Resources, the House Committee on Science, Space, and any other relevant committee of Congress, the results of a study on the viable market opportunities available for the recycling, second-use, and manufacturing of electric drive vehicle batteries in the United States. The Secretary shall make the results of independent evaluations of the program, conducted every four years, publicly available.

Appropriations totaling $200 million for this section are provided by Division J, Title III.

Sec. 40209. Advanced energy manufacturing and recycling grant program.[25]

Section 40209 directs the Secretary of Energy to establish a program that awards grants to qualifying advanced energy projects at eligible industrial, manufacturing, or recycling facilities. The section defines qualifying advanced energy projects, which may either (1) re-equip, expand or establish a manufacturing or recycling facility to produce certain types of advanced energy property; or (2) re-equip an industrial or manufacturing facility with equipment designed to substantially reduce greenhouse gas emissions. Both types of qualifying advanced energy projects must have a reasonable expectation of commercial viability. Both types of qualifying advanced energy projects also must be located in a census tract—or in a census tract adjacent to—where either (1) a coal mine closed after January 1, 2000, or (2) a coal-fired power plant closed after January 1, 2010. The section also defines an advanced energy property. Eligible entities are manufacturing firms with gross annual sales less than $100 million; fewer than 500 employees at the plant site; and annual energy bills between $100,000 and $2,500,000.

Appropriations for this section totaling $750 million are provided in Division J, Title III.

Sec. 40210. Critical minerals mining and recycling research.

Section 40210 directs the Secretary of Energy, in coordination with the Director of the National Science Foundation (NSF), to issue grants to support basic research to accelerate innovation to advance critical minerals mining, recycling, and reclamation strategies and technologies to make better use of domestic resources and to eliminate national reliance on minerals and mineral materials that are subject to supply disruptions. In a given fiscal year, not less than 30% of the grants shall be for projects relating to secondary recovery (i.e., recycling) of critical minerals and metals.

Section 40210 also indicates that the Critical Minerals Subcommittee of the National Science and Technology Council shall coordinate federal science and technology efforts to ensure secure and reliable supplies of critical minerals to the United States.

[25] Prepared by Corrie E. Clark, Specialist in Energy Policy.

This section authorizes to be appropriated $100 million for each of FY2021-FY2024; Division J provides no appropriations.

Sec. 40211. 21st Century Energy Workforce Advisory Board.[26]

Section 40211 requires the Secretary to establish a "21st Century Energy Workforce Advisory Board" (the Board) to create a strategy for DOE to support and develop a skilled energy workforce. The Board is to have at least 10 but not more than 15 members, including at least one representative from a labor organization with experience in the energy sector. Other members of the Board are required to have expertise in workforce development, energy industries, secondary or postsecondary education, organized labor, or recruiting underrepresented populations into the workforce.

The Board is required to develop strategies to:

- determine DOE's role in meeting the current and future labor needs of the energy sector, including consulting the Department of Labor to develop guidelines for necessary skills for the energy workforce;
- provide opportunities for students to qualify to work in the energy sector;
- identify ways that DOE can work with federal agencies and nongovernment entities to support energy workforce development; and
- develop opportunities for DOE and the National Laboratories to improve outreach and training to minority-serving institutions, veterans, underrepresented groups of workers, and displaced energy sector workers.

As part of its work, the Board is to be required to submit a report to the Secretary within one year of its establishment, and every two years thereafter until the Board terminates on September 30, 2026, to provide findings and proposals for workforce development in the energy sector. Upon review of the report, the Secretary is to submit the report to Congress and make it publicly available.

Title III—Fuels and Technology Infrastructure Investments

Subtitle A—Carbon Capture, Utilization, Storage, and Transportation Infrastructure[27]

This subtitle adds objectives and activities to existing DOE research programs. The subtitle also establishes new programs and policies aimed at promoting increased adoption of carbon capture, utilization, and storage (CCUS) and direct air capture (DAC) in the United States.[28]

CCUS and DAC are viewed as technology options to address climate change. Both technologies are in relatively early stages of development with a few operating projects worldwide. CCUS involves four main steps: (1) capturing carbon dioxide (CO_2) from an industrial source and

[26] Prepared by David H. Bradley, Specialist in Labor Economics.

[27] Prepared by Ashley J. Lawson, Analyst in Energy Policy, unless otherwise noted.

[28] Additional information on these technologies is available in CRS Report R44902, *Carbon Capture and Sequestration (CCS) in the United States*, by Angela C. Jones and Ashley J. Lawson; CRS In Focus IF11501, *Carbon Capture Versus Direct Air Capture*, by Ashley J. Lawson; CRS In Focus IF11861, *Funding for Carbon Capture and Carbon Removal at DOE*, by Ashley J. Lawson; and CRS Report R46192, *Injection and Geologic Sequestration of Carbon Dioxide: Federal Role and Issues for Congress*, by Angela C. Jones.

separating it from other gases; (2) compressing and transporting CO_2; (3) utilizing CO_2 as an input to other industrial processes, though this step is not always present; and (4) storing CO_2 in either useful products or geological reservoirs. DAC involves similar steps, but with CO_2 captured from ambient air.[29] Previous legislation aimed to promote CCUS and DAC, for example through DOE research, development, and demonstration (RD&D) activities.

The IIJA expands upon these activities with an emphasis on funding demonstration projects, addressing certain non-cost hurdles to commercialization, and promoting CO_2 transportation infrastructure investment.

Sec. 40301. Findings.

This section affirms congressional support for "large-scale" deployment of CCUS and carbon removal, including DAC. This section also expresses the need for "a backbone system of shared carbon dioxide transport and storage infrastructure," noting that these "share similar barriers to deployment previously faced by other types of critical national infrastructure, such as high capital costs and chicken-and-egg challenges, that require Federal and State support, in combination with private investment, to be overcome."

Sec. 40302. Carbon utilization program.

Section 40302 adds a DOE effort to develop or obtain standards and certifications to facilitate the commercialization of products utilizing captured CO_2. It also establishes a DOE grant program to states, units of local government, or public utilities to procure or use products utilizing captured CO_2, provided those products have "significant net reductions" in lifecycle greenhouse gas emissions compared to incumbents.

Division J, Title III, appropriates a total of $310.1 million for the period of FY2022-FY2026.

Sec. 40303. Carbon capture technology program.

Section 40303 amends the existing DOE carbon capture research program to include support for front-end engineering and design for CO_2 transport infrastructure.

Division J, Title III, appropriates a total of $100 million for the period of FY2022-FY2026.

Sec. 40304. Carbon dioxide transportation infrastructure finance and innovation.[30]

Under a national CCUS policy, a key issue is how to establish a sufficient CO_2 pipeline network at the lowest cost given the locations of prospective CO_2 source facilities and carbon sequestration sites. Regional CO_2 pipeline networks currently exist in the United States for enhanced oil recovery. Developing a more expansive national network for CCUS involves uncertainties about pipeline development timing, capacity, and utilization which may increase CO_2 transportation costs and pose challenges to private investment. Consequently, some stakeholders have called for federal financial support for CO_2 pipeline development.[31]

[29] Some proposed DAC applications capture dissolved CO_2 from seawater. In the National Defense Authorization Act for Fiscal Year 2020 (P.L. 116-92), Congress directed the Department of Defense to research such applications in coordination with DOE and other agencies. See also 10 U.S.C. §2358 note.

[30] Prepared by Paul W. Parfomak, Specialist in Energy Policy.

[31] See, for example, Ryan W. J. Edwards and Michael A. Celia, "Infrastructure to Enable Deployment of Carbon Capture, Utilization, and Storage in the United States," *Proceedings of the National Academy of Sciences*, September 18, 2018; Alex Zapantis et al., *Policy Priorities to Incentivise Large Scale Deployment of CCS*, Global CCS Institute, April 2019; and Regional Carbon Capture Deployment Initiative, "Regional Carbon Dioxide (CO_2) Transport Infrastructure Action Plan," October 12, 2021, https://betterenergy.org/wp-content/uploads/2021/10/Regional-CO2-

Section 40304 establishes a carbon dioxide transportation infrastructure finance and innovation program (CIFIA) administered by the Secretary of Energy to provide low-interest loans for CO_2 pipeline projects and grants for initial excess capacity on new pipelines to realize scale economies and allow for larger CO_2 volumes in the future.[32] To be eligible for a CIFIA loan or grant, a project must have eligible project costs of at least $100 million, must have a "reasonable prospect" of repaying principal and interest, and must demonstrate that the contracting process for construction can start within 90 days of obligation of the federal financial support. The Secretary is directed to prioritize support for pipeline projects that are large-capacity common carriers; have demonstrated demand for use of the pipeline capacity by CO_2 producers; enable geographical diversity in associated carbon capture projects; and are sited within, or adjacent to, existing pipeline or other linear infrastructure corridors to minimize siting impacts. Loans and grants would be capped at 80% of the eligible project costs.

To fund CIFIA, Section 40304 authorizes a total appropriation of $2.1 billion, with $600 million annually for FY2022 and FY2023, and $300 million annually for FY2024-FY2026. Division J, Title III, appropriates a total of $2.1 billion for FY2022-FY2023 (with most of the funds appropriated in FY2023).

Sec. 40305. Carbon storage validation and testing.

Section 40305 establishes a new Large-Scale Carbon Storage Commercialization Program to fund "the development of new or expanded commercial large-scale carbon sequestration projects and associated carbon dioxide transport infrastructure, including funding for the feasibility, site characterization, permitting, and construction stages of project development." This section provides guidance on project eligibility and selection, but does not specify selection details (e.g., size and location of selected projects).

Division J, Title III, appropriates a total of $2.5 billion for the period of FY2022-FY2026.

Sec. 40306. Secure geologic storage permitting.

Section 40306 authorizes appropriations of $5 million annually for the period of FY2022-FY2026 for the U.S. Environmental Protection Agency (EPA). The additional funding is to be used for issuing permits pursuant to the Safe Drinking Water Act (SDWA; 42 U.S.C. §§300f et seq.) for wells used for underground injection of CO_2 for geologic sequestration (Class VI wells). The section also authorizes a total of $50 million for EPA to issue as grants to states with Class VI primacy, to cover costs associated with establishing an approved underground injection control program for Class VI wells.[33] As of February 2022, Wyoming and North Dakota have Class VI primacy, and Louisiana and West Virginia have begun the application process for it.

Transport-Infrastructure-MOU-Action-Plan.pdf.

[32] The program is similar to existing federal programs that provide financing for transportation and water infrastructure projects under the Transportation Infrastructure Finance and Innovation Act (TIFIA, most recently reauthorized in P.L. 116-159) and Water Infrastructure Finance and Innovation Act (WIFIA, most recently reauthorized in P.L. 115-279), respectively.

[33] The Safe Drinking Water Act (SDWA) authorizes states to administer underground injection control (UIC) programs in lieu of EPA, known as *primacy*. For wells other than certain oil- and gas-related injection wells, states must adopt laws and regulations at least as stringent as EPA regulations and meet other statutory requirements to be granted primacy. EPA grants a state primacy through a federal rulemaking process for one or more classes of wells. If granted primacy for a class of wells, a state administers that UIC program, develops its own requirements, and allows well injection by state rule or by issuing permits. If a state's UIC plan has not been approved or the state has chosen not to assume program responsibility, SDWA requires that EPA directly implement the program in that state. For additional information, see CRS Report R46192, *Injection and Geologic Sequestration of Carbon Dioxide: Federal Role and Issues for Congress*, by Angela C. Jones.

Division J, Title VI, appropriates a total of $75 million.

Sec. 40307. Geologic carbon sequestration on the outer continental shelf.

Section 40307 authorizes the Department of the Interior to grant leases, easements, or rights of ways on the outer continental shelf for the purpose of long-term carbon sequestration. The section also clarifies that CO_2 injection for the purpose of sequestration does not constitute ocean dumping under 33 U.S.C. §§1401 et seq.

Sec. 40308. Carbon removal.

Section 40308 establishes a DOE program aimed at developing four regional direct air capture hubs, defined by the act as "a network of direct air capture projects, potential carbon dioxide utilization off-takers, connective carbon dioxide transport infrastructure, subsurface resources, and sequestration infrastructure located within a region." Hubs must have the potential to capture and store (or utilize) at least 1 million tons of CO_2 annually and meet other criteria. To the maximum extent possible, hubs should be located in different regions of the United States, each with existing or recently closed or retired carbon-intensive fuel production or industrial capacity. Two hubs should be located in "economically distressed communities" with "high levels of coal, oil, or natural gas resources."

Division J, Title III, appropriates a total of $3.5 billion for the period of FY2022-FY2026.

Subtitle B—Hydrogen Research and Development[34]

This subtitle amends the Energy Policy Act of 2005 (EPAct05, P.L. 109-58), adding new sections and revising existing ones on federal activities to move toward a hydrogen economy based on less carbon-intensive ways of hydrogen production.

Sec. 40311. Findings; purpose.

Section 40311 sets the forth the purpose of Subtitle B: to accelerate activities leading to the deployment into widespread use of hydrogen from "clean energy sources."

Sec. 40312. Definitions.

Section 40312 defines "clean hydrogen" to be hydrogen produced in a manner that complies with the greenhouse gas emissions standard to be developed pursuant to Section 40315 and satisfying the requirement that such hydrogen is produced with a carbon intensity equal to or less than 2 kilograms of carbon dioxide-equivalent per kilogram of hydrogen produced, measured at the site of production.

Sec. 40313. Clean hydrogen research and development program.

Section 40313 re-titles the "programs" in support of hydrogen from EPAct05 as the "Clean Energy Hydrogen Research and Development Program" and modifies its objectives, scope, and implementation. Section 40313 expands the hydrogen sources explicitly identified in EPAct05 to include "fossil fuels with carbon capture, utilization, and sequestration, renewable fuels, biofuels, and nuclear energy." Section 40313 authorizes the Secretary of Energy to partner with the private sector to conduct program activities in support of meeting cost goals for hydrogen technology. These goals are intended to support the EPAct05 goal of producing hydrogen with a "carbon intensity equal to or less than 2 kilograms of carbon dioxide-equivalent produced at the site of production per kilogram of hydrogen." The Secretary is shall conduct activities to advance and support production of clean hydrogen from diverse energy sources; its uses in various sectors and

[34] Prepared by Martin C. Offutt, Analyst in Energy Policy.

applications; and its transmission and distribution via pipelines adapted from natural gas use. Section 40313 further addresses fuel cell devices, fuel cell subsystems, and their reliability and durability. Within 180 days of enactment, the Secretary is to establish targets to address challenges to the "advancement of clean hydrogen systems and technologies."

Sec. 40314. Additional clean hydrogen programs.

Section 40314 inserts a new section into EPAct05 to create four Regional Clean Hydrogen Hubs through competitive solicitations. In making the awards, the Secretary is to apply specified criteria to feedstock diversity (i.e., the primary source that is converted into hydrogen) with a focus on different feedstocks in each of the four hubs. Likewise, the Secretary is to apply specified criteria to four different concepts of hydrogen end-use diversity (i.e., in the various sectors in which hydrogen is used).

Section 40314 also requires the Secretary to develop a "technologically and economically feasible" strategy and roadmap for wide-scale deployment and use of clean hydrogen. The section directs the Secretary to include a number of considerations regarding technologies, approaches, opportunities, and barriers. In addition, the section authorizes a Clean Hydrogen Manufacturing Recycling Research, Development, and Demonstration Program; and a Clean Hydrogen Electrolysis Program aimed at producing hydrogen for $2 per kilogram by 2026. Both are to include demonstration projects funded by DOE.

Appropriations totaling $9.5 billion for the additional clean hydrogen programs are provided by Division J, Title III. (Thereof, $8 billion is for Regional Clean Hydrogen Hubs, $0.5 billion for Clean Hydrogen Manufacturing Recycling Research, Development, and Demonstration Program, and $1 billion for Clean Hydrogen Electrolysis Program.)

Sec. 40315. Clean hydrogen production qualifications.

Section 40315 requires that the Secretary, in consultation with the Administrator of the EPA and after taking into account input from industry and other stakeholders, establish a standard for carbon intensity of clean hydrogen production where "clean hydrogen" is to be defined as hydrogen produced with a carbon intensity equal to or less than 2 kilograms of carbon dioxide-equivalent per kilogram of hydrogen produced, measured at the site of production. Five years after issuing the standard, the Secretary is to determine whether the definition needs to be adjusted.

Subtitle C—Nuclear Energy Infrastructure[35]

This subtitle includes provisions on advanced reactor research and deployment and the financial viability of existing nuclear power plants. DOE is required to report to Congress on the value of small advanced reactors and provide assistance for siting studies about their potential deployment in isolated communities. For DOE-funded advanced reactor research and development, provisions address the assignment of property interest and confidential or financial information. A new program to prevent the permanent shutdown of existing nuclear power plants allows plant owners and operators to qualify for credits to offset projected financial losses.

Sec. 40321. Infrastructure planning for micro- and small modular nuclear reactors.

A small modular reactor (SMR) is defined as an advanced reactor (a reactor with specific types of improvements over existing commercial reactors) with less than 300 megawatts (MW) of electric generating capacity and "that can be constructed and operated in combination with similar

[35] Prepared by Mark Holt, Specialist in Energy Policy.

reactors at a single site." A micro-reactor is defined as an advanced reactor with electric generating capacity of no more than 50 MW. In contrast, most existing commercial reactors have electrical capacity of 1,000 MW or more. Section 40321 requires DOE to submit a report to congressional committees of jurisdiction about how SMRs and micro-reactors "could enhance energy resilience and reduce carbon emissions." DOE is also required to provide technical and financial assistance for feasibility studies to identify "suitable locations for the deployment of micro-reactors, small modular reactors, and advanced nuclear reactors in isolated communities."

Sec. 40322. Property interests relating to certain projects and protection of information relating to certain agreements.

Section 40322 authorizes the Secretary of Energy to assign real or personal property interest related to DOE-funded advanced reactor projects to any entity, including the United States. Dissemination of trade secrets or privileged or confidential commercial or financial information developed or obtained pursuant to cooperative research and development agreements could be prohibited for up to 30 years, if reasonably necessary to allow a technology to reach commercialization.

Sec. 40323. Civil nuclear credit program.

Existing nuclear reactors that sell their electricity in competitive wholesale markets are eligible for credits established by Section 40323 if the Secretary of Energy certifies that the reactors are likely to close because of economic factors, that such closure would result in increased pollution, and that the Nuclear Regulatory Commission (NRC) has reasonable assurance that the reactor will operate safely. In applying to the Secretary for certification, reactors at risk of closure must submit cost and revenue data and an estimate of potential increased air pollution that would result from their shutdown. The revenue data must include the effects of any state assistance for which the applicant is also eligible.

Owners or operators of reactors certified by the Secretary can submit bids to receive credits for four years. The bids are to specify an amount per megawatt-hour of electricity generated that would be paid for each credit, including a commitment to generate a specific number of megawatt-hours during the four-year period. The bids cannot exceed the losses that the certification process has projected would be incurred without the credits. Certification for the assistance program could be renewed until September 30, 2031. The Secretary is to use the bidding results to award credits to as many certified reactors as possible within available funding.

Appropriations totaling $6 billion for the nuclear plant assistance program are provided by Division J, Title III.

Subtitle D—Hydropower[36]

Sec. 40331. Hydroelectric production incentives.

The hydroelectric production incentives program—sometimes referred to as the Section 242 program—provides incentive payments to qualified hydroelectric facilities that generate and sell electricity.[37] Qualified hydroelectric facilities include turbines and other generating devices that are operated by a nonfederal entity, that generate and sell hydroelectricity, that were added to an existing dam or conduit, and that have a generating capacity of no more than 20 MW, among

[36] Prepared by Kelsi Bracmort, Specialist in Natural Resources and Energy Policy, unless otherwise noted.

[37] For more information about the program, see 42 U.S.C. §15881 and U.S. Department of Energy, *EPAct 2005 Section 242 Hydroelectric Production Incentive Program*, https://www.energy.gov/eere/water/epact-2005-section-242-hydroelectric-production-incentive-program.

other criteria. Incentive payments may be issued to qualified hydroelectric facilities for a 10-year period. Incentive payments are based on the number of kilowatt-hours of hydroelectricity generated during the incentive period. DOE administers the program.

Section 40331 amends the hydroelectric production incentives program. For example, the act amends the definition for an existing dam or conduit to mean a dam or conduit that was constructed before the enactment of P.L. 117-58. Previously, the statute defined an existing dam or conduit as those that were constructed before August 8, 2005—the enactment date for EPAct05. The act modifies the amount of payment a qualified hydroelectric facility may receive to no more than $1 million in a calendar year. Previously, the payment amount was $750,000. The act strikes the previous authorization of appropriations for the program of $10 million annually for FY2021-FY2036. The act authorizes $125 million for the program for FY2022. Division J, Title III, appropriates the same amount, but the fiscal year is not specified.

Sec. 40332. Hydroelectric efficiency improvement incentives.

The hydroelectric efficiency improvement incentives program provides incentive payments to the owners and operators of hydroelectric facilities at existing dams to make capital improvements to improve the efficiency of the facility by at least 3%.[38] Incentive payments may not exceed a certain percentage of the costs of the capital improvement; one payment may be made for improvements at a facility. DOE administers the program.

Section 40332 amends the hydroelectric efficiency improvement incentives program. For example, the act modifies the incentive payment to no more than 30% of the costs of the capital improvement. Previously, the incentive payment could be no more than 10%. The act sets the maximum incentive payment to $5 million for the improvements at a facility in any one fiscal year. Previously, the maximum incentive payment was $750,000. The act strikes the previous authorization of appropriations for the program of $10 million annually for FY2021-FY2036, and authorizes $75 million for the program for FY2022. Division J appropriates the same amount, but the fiscal year is not specified.

Sec. 40333. Maintaining and enhancing hydroelectricity incentives.

Section 40333 creates a new hydropower program—the maintaining and enhancing hydroelectricity incentives program.[39] The Secretary of Energy may make incentive payments to owners or operators of qualified hydroelectric facilities for capital improvements related to improving grid resiliency, improving dam safety, or environmental improvements. Incentive payments are not to exceed 30% of the costs of the capital improvement. One incentive payment may be made in any one fiscal year for capital improvements at a facility; the payment shall not exceed $5 million. The act authorizes $553.6 million for the program for FY2022. Division J appropriates $276.8 million for each of FY2022 and FY2023.

Sec. 40334. Pumped storage hydropower wind and solar integration and system reliability initiative.

Section 40334 amends the Energy Storage System Research, Development, and Deployment Program.[40] The program focuses on research, development, and deployment of energy storage systems, distributed energy storage technologies, transportation energy storage technologies,

[38] 42 U.S.C. §15882.

[39] P.L. 117-58 adds Section 247, Maintaining and enhancing hydroelectricity incentives, to Subtitle C of Title II of the Energy Policy Act of 2005 (P.L. 109-58).

[40] 42 U.S.C. §17232. The program was established in the Energy Act of 2020, Title III, Subtitle C, Section 3201 (P.L. 116-260).

advanced control methods for energy storage systems, pumped hydroelectric energy storage systems, and more. P.L. 117-58 adds a pumped storage hydropower wind and solar integration and system reliability initiative to the program. The initiative allows the Secretary of Energy to fund a pumped storage hydropower demonstration project "to facilitate the long-duration storage of intermittent renewable electricity." The demonstration project must meet certain requirements (e.g., provide no less than 1,000 MW of storage capacity, be able to store electricity generated by intermittent renewable electricity projects located on tribal land). There is a matching fund requirement for eligible entities that receive financial assistance. Section 40334 authorizes $2 million annually for FY2022-FY2026. Division J appropriates a total of $10 million (unspecified year).

Sec. 40335. Authority for pumped storage hydropower development using multiple Bureau of Reclamation reservoirs.[41]

Sections 40335 and 40336 of the IIJA both deal with Bureau of Reclamation (Reclamation) and FERC authorities to permit pumped storage hydropower development at federal facilities. Section 40335 shifts some of these authorities to Reclamation by clarifying that the bureau has the sole authority to develop pumped storage hydropower at facilities involving only Reclamation reservoirs, regardless of whether these facilities are authorized for hydropower development.[42]

Sec. 40336. Limitations on issuance of certain leases of power privilege.[43]

Section 40336 lays out specific requirements that Reclamation must adhere to before it can permit a specific proposed Lease of Power Privilege project—the Banks Lake Pumped Storage Project at Roosevelt Lake and Banks Lake in Washington.[44] In order to proceed with this project, the lessee and Secretary must enter into an agreement with and make certain accommodations for the Confederated Tribes of the Colville Reservation and the Spokane Tribes, among other things. Both tribal reservations border Lake Roosevelt and possess water rights for waters involved in this development.

Subtitle E—Miscellaneous

Sec. 40341. Solar energy technologies on current and former mine land.[45]

Section 40341 requires "a description of the technical and economic viability of siting solar energy technologies on current and former mine land, including necessary interconnection and transmission siting and the impact on local job creation" as part of DOE's report on strategic vision for solar energy (pursuant to 42 U.S.C. §16238(b)(6)). Current law requires the next strategic vision report by September 1, 2022.

Sec. 40342. Clean energy demonstration program on current and former mine land.[46]

[41] Prepared by Charles V. Stern, Specialist in Natural Resources Policy.

[42] Reclamation and FERC both have authorities to permit nonfederal hydropower development at Reclamation facilities. Reclamation permits this development via Lease of Power Privilege for small conduit and hydropower-authorized dams at its facilities, while FERC is charged with permitting hydropower at Reclamation dams not authorized for hydropower. Similar to the division of responsibility for Reclamation dams, pumped storage hydropower projects involving Reclamation reservoirs have historically been subject to either the FERC permitting process or Reclamation's Lease of Power Privilege process, based on whether the Reclamation facility was originally authorized for hydropower development.

[43] Prepared by Charles V. Stern, Specialist in Natural Resources Policy.

[44] As a result of Section 40335, permitting this project is under Reclamation's exclusive jurisdiction.

[45] Prepared by Ashley J. Lawson, Analyst in Energy Policy.

[46] Prepared by Ashley J. Lawson, Analyst in Energy Policy.

Section 40342 directs the Secretary to establish a DOE demonstration program to select not more than five clean energy projects on mine lands (as defined by the act) associated with some coal mines or hard rock mining claims. At least two of these must use solar energy. For purposes of the program, the section defines clean energy projects as those using one or more of the following: solar energy, microgrids, geothermal energy, direct air capture, CCUS, energy storage, and advanced nuclear technologies. The Secretary is directed to prioritize several factors in selecting projects, including greenhouse gas reductions and job creation. The Secretary is directed to consult with other federal agencies in selecting projects and confirming compatibility with mining, exploration, or reclamation activities.

Division J, Title III, appropriates a total of $500 million for the period of FY2022-FY2026.

Section 40343. Leases, easements, and rights-of-way for energy and related purposes on the outer continental shelf.

This section amends provisions of the Outer Continental Shelf Lands Act (43 U.S.C. 1337(p)(1)(C)) that authorize the Secretary of the Interior to offer leases, easements, and rights-of-way for renewable energy activities on the U.S. outer continental shelf. Specifically, Section 40343 adds renewable energy storage ("storage ... of energy from sources other than oil and gas") as an allowable activity for which leases, easements, or rights-of-way could be granted. This could facilitate the incorporation of energy storage, such as battery storage for offshore wind, into future renewable energy projects on the outer continental shelf.

Title IV—Enabling Energy Infrastructure Investment and Data Collection

Subtitle A—Department of Energy Loan Program[47]

Sec. 40401. Department of Energy loan programs.

This section amends three federal credit programs administered by DOE: (1) Title XVII loan guarantee program for innovative technologies, (2) Advanced Technology Vehicles Manufacturing (ATVM) direct loan program, and (3) loan guarantees for Alaska natural gas transportation projects and systems.

Title XVII loan guarantee

Established in EPAct05 (P.L. 109-58), the Title XVII loan guarantee program (as amended at 42 U.S.C. §16511 et seq.) authorizes the Secretary of Energy to make loan guarantees for projects that reduce anthropogenic greenhouse gas emissions and employ new or significantly improved technologies. Provisions contained in the IIJA include several Title XVII amendments. First, the Secretary of Energy is now required to consider specific and statutorily defined factors when determining if a project receiving a loan guarantee has a "reasonable prospect of repayment." Second, projects that increase supply of domestically produced critical minerals are now an eligible project category—previously appropriated funds and loan guarantee commitment authority may not be used for these projects. Third, for future loan guarantee commitments the Secretary of Energy will have to certify that "political influence did not impact the selection of the project." Finally, projects receiving financial support from a qualified "State Energy Financing Institution" are eligible to receive loan guarantees. Furthermore, these projects will not be required to employ new/significantly improved technologies. This amendment could reduce

[47] Prepared by Phillip Brown, Specialist in Energy Policy.

the financial risk, and associated cost to the federal government, for state-supported projects and, depending on programmatic implementation, could result in this being a preferred path for projects seeking a federal loan guarantee commitment.

ATVM direct loan program

Established in EISA, (P.L. 110-140), the Advanced Technology Vehicles Manufacturing (ATVM) Incentive Program (as amended at 42 U.S.C. §17013) includes a direct loan program to provide funding for manufacturing facilities in the United States that will produce qualifying vehicles and components. Provisions contained in Section 40401 amend the ATVM program in several ways. First, the definition of advanced technology vehicles is expanded to include medium and heavy duty vehicles that exceed EPA greenhouse gas and fuel efficiency standards, trains/locomotives, maritime vessels, aircraft, and hyperloop technology. Second, the Secretary of Energy is now required to consider specific items when selecting eligible projects to receive loans, including additional requirements for determining a project's "reasonable prospect of repayment," and loans shall not be subordinate to other financing. Third, this section makes miscellaneous reforms and amendments, including expanding the types of entities eligible for funding, requirements for the Secretary to coordinate these activities with other DOE vehicle, bioenergy, hydrogen, and fuel cell projects, outreach to potential applicants, and a certification that political influence did not influence project selection. Finally, reports to Congress about the status of projects supported by ATVM direct loans are periodically required. The first report is due November 2023.

Loan guarantees for Alaska Natural Gas transportation projects and systems

Established in 2004 as part of the Military Construction Appropriations and Emergency Hurricane Supplemental Act, 2005 (P.L. 108-324), the Alaska Natural Gas Pipeline Act (as amended at 15 U.S.C. §720 et seq.) authorizes the Secretary of Energy to guarantee loans and other debt obligations up to approximately $26 billion, adjusted for inflation ($18 billion in 2004 dollars). Guaranteed loans and debt obligations are available for Alaskan natural gas transportation projects or systems, including pipelines, gas treatment plants, liquefaction plants, and liquefied natural gas tankers. Generally, the IIJA amends the loan guarantee authority by removing the requirement that eligible projects deliver natural gas to either "West Coast" states or the "continental United States." As a result, this loan guarantee authority can now be used to provide funding support for qualifying projects and systems that deliver natural gas to international destinations.

Subtitle B—Energy Information Administration[48]

The U.S. Energy Information Administration (EIA), within DOE, is the lead federal agency for collecting, analyzing, and disseminating data on U.S. and world energy supply and consumption. EIA data collections span the energy system from supply and transport to consumption. EIA relies upon surveys of energy sector participants to collect its data. Surveys vary in scope, frequency, number of respondents, and other factors. Responses to EIA surveys are mandatory, pursuant to 15 U.S.C. §796(b) and 42 U.S.C. §7135(b). EIA also produces analyses and projections, including its flagship projection, the Annual Energy Outlook (AEO).[49]

The IIJA directs EIA to expand its data collection in several areas, focusing on electricity, building energy consumption, and international energy production and use. The act also directs

[48] Prepared by Ashley J. Lawson, Analyst in Energy Policy, unless otherwise noted.

[49] For more information, see CRS Report R46524, *The U.S. Energy Information Administration*, coordinated by Ashley J. Lawson; CRS In Focus IF11691, *The Annual Energy Outlook (AEO): A Brief Overview*, by Ashley J. Lawson and Kelsi Bracmort; and CRS In Focus IF11628, *Using Models in Energy Policymaking*, by Ashley J. Lawson.

EIA to develop plans for forecasting demand related to critical minerals and improving the National Energy Modeling System (NEMS), EIA's primary computer model used to produce the AEO.

Sec. 40411. Definitions.

Section 40411 provides definitions for the subtitle.

Sec. 40412. Data collection in the electricity sector.

Section 40412 requires the Administrator of the EIA to establish, within 90 days, an online database for the bulk power system (i.e., the electricity transmission system) in the contiguous United States. The database may build upon existing databases such as EIA's Hourly Electric Grid Monitor. Within one year, Administrator of the EIA must undertake additional activities:

- To the maximum extent practicable, add hourly operating data such as demand, demand forecasts, generation by fuel type, electricity storage and discharge, and marginal greenhouse gas emissions rate.
- Establish a system to harmonize its data collection with EPA and state or regional energy credit registries.[50]
- Establish a system for providing data broadly related to the integration of renewable energy as well as disruptions caused by cyberattacks, physical attacks, extreme weather events, or other causes.
- Establish a system for providing data on the electricity distribution system, including the delivered generation mix for each load-serving entity (i.e., utility) and the use of distributed energy resources (e.g., rooftop solar).

Sec. 40413. Expansion of energy consumption surveys.

Section 40413 requires the Administrator of the EIA, within two years, to expand its current surveys of building energy consumption in the manufacturing, commercial, and residential sectors. This expansion must involve increased survey scope and frequency, new data collection methods, means to report community-level economic and environmental impacts, and improved data presentation methods including cartographic format. This section provides additional details regarding changes to EIA's Manufacturing Energy Consumption Survey and Residential Energy Consumption Survey. Details regarding changes to EIA's Commercial Building Energy Consumption Survey (specifically, data sharing agreements with EPA) are provided in Section 40514.

Sec. 40414. Data collection on electric vehicle integration with the electricity grids.

Section 40414 requires the Administrator of the EIA to expand its data collection related to electric vehicles within one year. Data sources may include charging stations, utilities, owners of electric vehicles, and electric balancing authorities.

Sec. 40415. Plan for the modeling and forecasting of demand for minerals used in the energy sector.[51]

[50] Such registries may be used, for example, to track renewable energy credits for purposes of complying with state renewable portfolio standards or similar policies.

[51] Prepared by Brandon S. Tracy, Analyst in Energy Policy.

Section 40415 directs the Administrator of the EIA to develop a plan for the modeling and forecasting of demand for energy technologies that use critical minerals, including technologies for energy production, transmission, or storage purposes.

Sec. 40416. Expansion of international energy data.

Section 40416 requires the Administrator of the EIA to expand its international energy data within one year, by working with the International Energy Agency (IEA). The expansion must include data on energy consumption by fuel, economic sector, and end use; relevant measures of energy use including cost and "emissions intensity";[52] and tools for "straightforward country-to-country comparisons."

Sec. 40417. Plan for the National Energy Modeling System.

Section 40417 requires the Administrator of the EIA to develop a plan, within 180 days, to identify any need or opportunity to update NEMS, with 14 possible targets for potential updates provided in the act.

Sec. 40418. Report on costs of carbon abatement in the electricity sector.

Section 40418 requires the Administrator of the EIA to report, within 270 days, on the potential use of levelized cost of carbon abatement, a measure of the cost to reduce greenhouse gas emissions through various policies.[53]

Sec. 40419. Harmonization of efforts and data.

Section 40419 requires the Administrator of the EIA, within a year, to establish a system to harmonize data and data collection efforts among EIA, EPA, other relevant federal agencies, and state or regional energy credit registries, as EIA deems appropriate.

Subtitle C—Miscellaneous

Sec. 40431. Consideration of measures to promote greater electrification of the transportation sector.[54]

The sale of electricity is governed by many different federal, state, and local regulations. When it comes to the sale of electricity for the purpose of charging EVs, the states are generally acknowledged to have regulatory jurisdiction over retail electricity transactions,[55] though federal and municipal authorities may also play a role. State approaches to regulation vary considerably. Rules and regulations governing the retail sale of electricity generally originate with a state public utility commission.

[52] Emissions intensity is not defined for purposes of Section 40416.

[53] Levelized cost of carbon abatement has been proposed to, for example, account for the fact that renewable energy can have a different impact on greenhouse gas (GHG) emissions depending on where and how it is used. For example, a new solar facility might displace output from a coal-fired power plant, a natural gas-fired power plant, or a nuclear power plant, with different implications for GHG reductions. For further discussion, see S. Julio Friedmann et al., *Levelized Cost of Carbon Abatement: An Improved Cost-Assessment Methodology for a Net-Zero Emissions World*, Columbia University's Center on Global Energy Policy, October 2020.

[54] Prepared by Corrie E. Clark, Specialist in Energy Policy.

[55] Retail transactions or retail sales are generally defined by the Federal Energy Regulatory Commission (FERC) as "sales made directly to the customer that consumes the energy product." (FERC, "Glossary," accessed November 29, 2021, at https://www.ferc.gov/about/what-ferc/about/glossary.) States typically regulate retail electricity transactions.

Section 40431 amends Section 111(d) of PURPA (16 U.S.C. §2621(d)) (as amended by Section 40104(a)(1)[56]) by adding a standard for electric vehicle charging programs. The section directs states to consider measures to promote greater transportation electrification including through the establishment of rates that promote affordable and equitable electric vehicle charging options for residential, commercial, and public charging infrastructure; improve the customer experience for light-, medium-, and heavy-duty vehicles; accelerate third-party investment in electric vehicle charging; and recover the marginal costs of delivering electricity to electric vehicles and charging infrastructure.

Section 40431 also establishes time periods for commencing consideration (no later than one year after enactment) and completing consideration and determination (no later than two years after enactment) of the electric vehicle charging programs standard. For states that have acted prior to enactment either through implementing an electric vehicle charging program standard, conducting a regulatory proceeding to consider a standard, or voting on legislation on implementation of a standard, compliance requirements do not apply.

Sec. 40432. Office of public participation.[57]

Section 40432 amends Section 319 of the Federal Power Act (16 U.S.C. §825q-1) on FERC's Office of Public Participation. This section eliminates provisions on the office director's four-year term, and the limitation for the director's removal to only cases of "inefficiency, neglect of duty, or malfeasance in office." This section also updates a provision on the director's compensation, and removes a paragraph establishing a budget for the office.

Sec. 40433. Digital climate solutions report.[58]

Within one year of enactment, the Secretary is directed to submit to the House Committee on Energy and Commerce and the Senate Committee on Energy and Natural Resources a report assessing how digital tools such as artificial intelligence, machine learning, blockchain, and distributed computing can be used to address climate change.

Sec. 40434. Study and report by the Secretary of Energy on job loss and impacts on consumer energy costs due to the revocation of the permit for the Keystone XL pipeline.[59]

Originally proposed in 2008, TC Energy's Keystone XL Pipeline was intended to transport oil sands crude[60] from Canada and shale oil produced in the Bakken region of North Dakota and Montana to a market hub in Nebraska. On January 20, 2021, President Biden signed an executive order revoking the Presidential Permit for the cross-border segment of the Keystone XL Pipeline between Canada and Montana which had been issued by President Trump.[61] As the result of losing the permit, TC Energy announced that it was terminating the pipeline project.[62]

Development of Keystone XL had been controversial. Pipeline proponents argued for increasing U.S. oil supplies from a stable ally, which they believed would offer economic benefits, including

[56] See "Subtitle A—Grid Infrastructure and Reliability."

[57] Prepared by Richard J. Campbell, Specialist in Energy Policy.

[58] Prepared by Brent D. Yacobucci, Section Research Manager, Energy and Minerals Section.

[59] Prepared by Paul W. Parfomak, Specialist in Energy Policy.

[60] See CRS Report R43128, *Oil Sands and the Oil Spill Liability Trust Fund: The Definition of "Oil" and Related Issues for Congress*, by Jonathan L. Ramseur.

[61] The White House, *Executive Order on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis*, E.O. 13990, January 20, 2021.

[62] TC Energy, "TC Energy Confirms Termination of Keystone XL Pipeline Project," press release, June 9, 2021.

lower fuel prices and new job opportunities. Opponents expressed concern about greenhouse gas emissions, continued U.S. dependency on fossil fuels, and the environmental risk of an oil release. Following TC Energy's announcement, some in Congress have called for a quantification of the economic impact of Keystone XL's cancellation.[63]

Sec. 40434 mandates that the Secretary of Energy conduct a study of Keystone XL job losses and the projected impact on consumer energy costs over the 10-year period from the date of President Biden's executive order as a result of the order. The report must be submitted within 90 days of enactment. Sec. 40434 provides no additional details on how the Secretary should evaluate these impacts, so the report methodology appears to be left to the Secretary's discretion.

Sec. 40435. Study on impact of electric vehicles.[64]

The Secretary of Energy is directed to conduct a study on the environmental impact of the lifecycle of EVs, to be submitted to Congress within 120 days of enactment**.**

Sec. 40436. Study on impact of forced labor in China on the electric vehicle supply chain.[65]

China leads in both EV sales and production, and the global market for vehicle electrification is expanding. In 2020, approximately 2 million battery electric vehicles were sold worldwide, an increase of about 30% over 2019.[66] Of the approximately 2 million battery electric vehicles sold worldwide in 2020, 46% were sold in China. At the same time, reportedly 47% of battery electric vehicles were produced in China.[67] China's investments in this sector and its supply chain (e.g., minerals extraction and processing) have prompted increased scrutiny from some governments.[68]

Section 40436 directs the Secretary of Energy, within 120 days of enactment of the IIJA, to study the impact of forced labor in China on the electric vehicle supply chain. The Secretary of Energy is to coordinate with the Secretary of State and the Secretary of Commerce.

Title V—Energy Efficiency and Building Infrastructure

Subtitle A—Residential and Commercial Energy Efficiency[69]

Sec. 40501. Definitions.

Section 40501 defines and sets criteria for which states are the 15 "priority states" that are designated in Section 40502 to receive 60% of the supplemental capitalization grants.

Sec. 40502. Energy efficiency revolving loan fund capitalization grant program.

---

[63] See, for example, U.S. Senator Jerry Moran, "Sen. Moran, Colleagues Introduce Legislation to Expose Keystone XL Job Loss," press release, June 9, 2021.

[64] Prepared by Melissa N. Diaz, Analyst in Energy Policy. For more information on EV lifecycle environmental effects, see CRS Report R46420, *Environmental Effects of Battery Electric and Internal Combustion Engine Vehicles*, by Richard K. Lattanzio and Corrie E. Clark.

[65] Prepared by Corrie E. Clark, Specialist in Energy Policy.

[66] While global electric car sales increased in 2020, the COVID-19 pandemic affected the global automotive market resulting in an overall decrease in vehicle sales of 16% over 2019. International Energy Agency (IEA) (2021), Global EV Data Explorer, IEA, Paris https://www.iea.org/articles/global-ev-data-explorer.

[67] Keith Bradsher, "As Cars Go Electric, China Builds a Big Lead in Factories," *New York Times*, May 4, 2021 (updated September 22, 2021), https://www.nytimes.com/2021/05/04/business/china-electric-cars.html.

[68] For more information on China's efforts to expand its global economic reach and influence, see CRS In Focus IF11735, *China's "One Belt, One Road" Initiative: Economic Issues*, by Karen M. Sutter, Andres B. Schwarzenberg, and Michael D. Sutherland.

[69] Prepared by Martin C. Offutt, Analyst in Energy Policy.

Section 40502 authorizes the Secretary to establish a program to capitalize revolving loan funds implemented by the states. Section 40502 includes requirements on how the grants are to be allocated among the states, with 40% of grant monies going to states eligible under the State Energy Program (42 U.S.C. §§6321 et seq.), with unclaimed funds being made available to remaining states. Section 40502 specifies that the remaining 60% of funds be made available as supplemental capitalization grants to the priority states defined in Section 40501. The section further specifies that these monies be allocated according to a formula determined by the Secretary. Any funds that remain unclaimed under the formula are to be redistributed to the remaining priority states. The supplemental capitalization grants do not supplant any priority state grants received.

Section 40502 enumerates the purposes for which states may use the capitalization grants, such as for loans to eligible recipients to conduct energy audits and energy upgrades and retrofits. The section also requires states to conduct energy audits of the loan recipients who perform upgrades and retrofits. The section provides that states may use up to 25% of their capitalization for grants or technical assistance.

Division J, Title III, appropriates a total of $250 million for the capitalization grant program in this section.

Sec. 40503. Energy auditor training grant program.

Section 40503 authorizes the Secretary to establish a grant program within the SEP for states to train individuals to conduct energy audits or surveys of commercial and residential buildings.

Division J, Title III, appropriates $40 million for auditor training grant program in this section.

Subtitle B—Buildings[70]

Sec. 40511. Cost-effective codes implementation for efficiency and resilience.

Building codes specify minimum design and construction requirements for new construction and major renovation buildings. Historically, they have focused primarily on health and safety, but they can cover many other aspects of a building's design or construction, from aesthetics to resource use. The Energy Policy Act of 1992 (EPAct92, P.L. 102-486) established a baseline for energy efficiency in building codes. Beyond certain federally mandated minimum requirements, it is left to state and local governments to determine the contents of the codes that regulate buildings within their jurisdictions. This allows flexibility with the codes to meet the priorities of a specific region.

Section 40511 of the IIJA adds a Section 309 to the Energy Conservation and Production Act (P.L. 94-385). The section establishes within the DOE Building Technologies Office a competitive grant program for state building code agencies (or other eligible entities) to enable sustained cost-effective implementation of updated building energy codes. The program is to consider factors such as prospective energy savings; long-term sustainability of those savings; prospective benefits (including resilience and peak load reduction, occupant safety and health, and environmental performance); demonstrated capacity of the agency/eligible entity; and the need for assistance. Eligible activities include creating/enabling partnerships for training builders, contractors, architects, other design and construction professionals, and building code officials; collecting/disseminating quantitative data; developing and implementing plans (including

[70] Prepared by Corrie E. Clark, Specialist in Energy Policy.

measuring compliance); addressing implementation needs for rural, suburban, and urban areas; and implementing updates in energy codes.

Appropriations totaling $225 million are provided by Division J, Title III, for the period of FY2022-FY2026.

Sec. 40512. Building, training, and assessment centers.

Section 40512 directs the Secretary of Energy to provide grants to colleges and universities including tribal colleges and universities to establish building training and assessment centers, to promote building energy efficiency and environmental performance, and to coordinate with industrial research and assessment centers.[71] To the maximum extent practicable, DOE is to collocate building training and assessment centers with industrial assessment centers.

Appropriations totaling $10 million are provided by Division J, Title III.

Sec. 40513. Career skills training.

Section 40513 directs the Secretary of Energy to award grants to eligible entities to pay the federal share of career skills training programs (50%) to train and certify students to install energy efficient building technologies. Eligible entities include nonprofit partnerships with equal participation of industry and labor organizations and may include other organizations such as workforce investment boards, community-based organizations, qualified service and conservation corps, and education institutions.

Appropriations totaling $10 million are provided by Division J, Title III.

Sec. 40514. Commercial building energy consumption information sharing.

Both the EIA and EPA collect commercial building energy performance data. EIA conducts the Commercial Buildings Energy Consumption Survey (CBECS), a national sample survey that collects information on U.S. commercial buildings, including energy-related building characteristics, energy consumption, and energy expenditures.[72] Respondent information provided to CBECS is confidential. EPA collects commercial building energy and water performance data on a voluntary basis as part of the ENERGY STAR® Program.[73] Using the ENERGY STAR Portfolio Manager tool, commercial building owners or managers can document a building's energy and water performance, compare a building's performance to a typical building with a similar function, and submit performance data for consideration and certification with the ENERGY STAR label. For a building to receive the ENERGY STAR label, it must be verified to perform among the top 25% of similar buildings nationwide; EPA relies upon EIA's CBECS for data on typical building performance. In August 2018, EPA updated performance metrics for U.S. buildings in ENERGY STAR Portfolio Manager based on data collected for EIA's 2012 CBECS.[74]

[71] DOE industrial assessment centers conduct energy assessments for eligible manufacturers to identify opportunities to improve energy efficiency, productivity, and competitiveness and to reduce waste. The IIJA also makes changes to the authorization for the industrial research and assessment centers; see "Sec. 40521. Future of industry program and industrial research and assessment centers."

[72] CBECS includes building types such as schools, hospitals, correctional institutions, buildings used for religious worship, stores, restaurants, warehouses, and office buildings. For more information on the CBECS, see https://www.eia.gov/consumption/commercial/about.php.

[73] For more information on ENERGY STAR, see CRS In Focus IF10753, *ENERGY STAR Program*, by Corrie E. Clark.

[74] EPA, "Updates to ENERGY STAR® Metrics with New Market Data," https://www.energystar.gov/buildings/facility-owners-managers/existing-buildings/use-portfolio-manager/update-energy-star-scores-cbecs.

Section 40514 directs the Administrator of the EIA and the Administrator of the EPA to enter into an information-sharing agreement and to submit the agreement to Congress within 120 days of enactment. The section directs the agreement to provide access to the EIA to building-specific data within the Portfolio Manager database, to provide access to the EPA to building-specific data collected by the CBECS, to describe the manner in which EIA will incorporate the data into any future CBECS, and to describe and compare methodologies to maximize the quality of data collected by EIA and EPA. The section also directs the Administrator of the EIA and the Administrator of the EPA to protect submitted information according to existing public law.

Subtitle C—Industrial Energy Efficiency

Part I—Industry[75]

Sec. 40521. Future of industry program and industrial research and assessment centers.

Section 40521 changes the name of the "energy-intensive industries program" to the "future of industry program" and directs the Secretary of Energy to expand the industrial research and assessment centers, create Centers of Excellence for the highest-performing industrial research and assessment centers, and improve coordination with the National Institute of Standards and Technology (NIST), the Federal Energy Management Program (FEMP), and the Building Technologies Office within DOE. The section directs the industrial research and assessment centers to increase partnerships with the DOE National Laboratories, energy service providers, and technology providers; identify opportunities to reduce greenhouse gas emissions; and promote sustainable manufacturing. The section also directs the Secretary of Energy to provide funding to outreach and coordination efforts. The Secretary is also directed to pay for half the cost of associated internship programs and associated apprenticeship programs. The section directs the Administrator of the Small Business Administration (SBA) to expedite consideration of loans from eligible small businesses. The section also expands the definition of an "energy-intensive industry" to include water and wastewater treatment facilities.

Appropriations totaling $150 million for the preceding provisions are provided by Division J, Title III, for the period of FY2022-FY2026. In addition, Section 40521(i) directs DOE to establish an implementation grant program to carry out a covered project with a potential for energy efficiency gains or greenhouse gas emissions reduction. Appropriations totaling $400 million for the grant program provision are provided in Division J, Title II.

Sec. 40522. Sustainable manufacturing initiative.

Section 40522 directs the Secretary of Energy to provide technical assessments to manufacturers to maximize energy efficiency, minimize waste, improve water efficiency, and conserve natural resources. DOE also is to coordinate internally with the Advanced Manufacturing Office (AMO), the Building Technologies Office, and the Federal Energy Management Program; with the private sector; and with other agencies including NIST. The section directs the Secretary of Energy to carry out a joint industry-government partnership program for research, development, and demonstration in sustainable manufacturing and industry technologies and processes.

[75] Prepared by Corrie E. Clark, Specialist in Energy Policy.

Part II—Smart Manufacturing[76]

While the language in this part directs actions by the Secretary of Energy and not a particular DOE office or agency, the current activities of the AMO are consistent with the Smart Manufacturing efforts identified in Part II. The AMO supports R&D projects, R&D consortia, and early-stage technical partnerships with national laboratories, companies (for-profit and not-for-profit), state and local governments, and universities through competitive, merit-reviewed funding opportunities designed to investigate new manufacturing technologies.

Sec. 40531. Definitions.

This section provides definitions for a number of terms used in this part: energy management system, industrial research and assessment center, information and communication technology, institution of higher education, North American Industry Classification System, small and medium manufacturers, and smart manufacturing.

Sec. 40532. Leveraging existing agency programs to assist small and medium manufacturers.

The AMO supports industrial assessment centers (IACs). These IACs provide assessments to eligible small- and medium-sized manufacturers and identifies opportunities to improve productivity, reduce waste, and save energy.

The section directs the Secretary to expand the scope of technologies covered by the industrial research and assessment centers. The expanded scope includes smart manufacturing technologies and practices. It also allows for necessary training and tools for the directors of industrial research and assessment centers to provide technical assistance to manufacturers in smart manufacturing technologies and practices, including energy management systems.

Sec. 40533. Leveraging smart manufacturing infrastructure at National Laboratories.

This section directs the Secretary to conduct a study on how DOE can increase access to existing high-performance computing resources in the national laboratories, particularly for small and medium manufacturers. The study is to focus on increasing access to the computing facilities while ensuring that the information from the manufacturer is protected and that the security of the national laboratory facility is maintained. The Secretary is to submit a report to Congress describing the results of the study. The section also directs the Secretary to facilitate access to the national laboratories studied for small and medium manufacturers so that small and medium manufacturers can fully use the high-performance computing resources to enhance U.S. manufacturing competitiveness.

Sec. 40534. State manufacturing leadership.

This section authorizes the Secretary to establish a competitive financial assistance program to states to establish programs that support the implementation of smart manufacturing technologies. Evaluation criteria for selection includes technical merit, innovation and impact; research approach, workplan, and deliverables; academic and private sector partners; and alternate sources of funding. A state may use the financial assistance to facilitate access to high-performance computing resources for small and medium manufacturers and to provide assistance to small and medium manufacturers to implement smart manufacturing technologies and practices. The maximum award for financial assistance is $2 million and the term of the award is limited to three years. States are required to contribute matching funds of at least 30% of the amount of financial

[76] Prepared by John F. Sargent, Jr., Specialist in Science and Technology Policy, and Corrie E. Clark, Specialist in Energy Policy.

assistance. The section directs the Secretary to conduct semiannual evaluations of each award to determine the impact and effectiveness of the programs funded with financial assistance and to provide guidance to states regarding program execution.

Appropriations for Section 40534 totaling $50 million are provided in Division J, Title III.

Sec. 40535. Report.

This section directs the Secretary to annually submit a report to Congress, and to make it publicly available, on the progress made in advancing smart manufacturing the United States.

Subtitle D—Schools and Nonprofits[77]

Sec. 40541. Grants for energy efficiency improvements and renewable energy improvements at public school facilities.

Section 40541 authorizes a competitive grant program to be administered by DOE to make energy improvements at schools. An energy improvement is to include any improvement, repair, renovation, or installation that results in energy cost savings. It can also include an energy improvement that leads to an improvement in teacher and student health and results in a reduction in energy costs. The installation of renewable energy technologies, the installation of zero-emissions vehicle infrastructure, and the purchase or lease of zero-emissions vehicles are also to qualify as energy improvements. Awardees are required to submit a report to DOE describing the use of funds, cost savings realized by the energy improvements, the results of any audit, the use of any utility programs and public benefit funds, and the use of performance tracking for energy improvements. The Secretary of Energy is required to develop and publish guidelines and best practices for the program and may provide technical assistance to eligible entities for implementation of guidelines and best practices.

Appropriations totaling $500 million are provided in Division J, Title III.

Sec. 40542. Energy efficiency materials pilot program.

Section 40542 authorizes the creation of a grant program to provide matching funds for nonprofits that retrofit buildings with energy efficiency improvements, including renewable energy generation, improved lighting, heating and air conditioning systems, and insulation. Criteria for awarding grants is to be based upon the expected energy savings from improvements, the cost-effectiveness of the improvements, the evaluation and verification plan, financial need, and matching contribution.

Appropriations totaling $50 million are provided in Division J, Title III.

Subtitle E—Miscellaneous[78]

Sec. 40551. Weatherization assistance program.

The Weatherization Assistance Program (WAP) enables low-income families to permanently reduce their energy consumption by making their dwellings more energy efficient. The WAP, established in 1976 and authorized in Title IV of the Energy Conservation and Production Act (ECPA, P.L. 94-385), is a formula grant program: funding flows from DOE to state governments and then to local governments and weatherization agencies. DOE program guidelines specify that a variety of energy efficiency measures are eligible for support under the program. The measures

[77] Prepared by Corrie E. Clark, Specialist in Energy Policy.

[78] Prepared by Corrie E. Clark, Specialist in Energy Policy.

include insulation, space-heating equipment, energy-efficient windows, water heaters, and efficient air conditioners.

Section 40551 reauthorizes the program. It also states that wage rate requirements specified in Section 41101[79] shall apply only to work performed on multifamily buildings of at least five units.

Appropriations totaling $3.5 billion are provided in Division J, Title III.

Sec. 40552. Energy Efficiency and Conservation Block Grant Program.

The Energy Efficiency and Conservation Block Grant (EECBG) program was authorized by the Energy Independence and Security Act (EISA, P.L. 110-140). The goals of the program are to help reduce energy use and carbon emissions at the local and regional level. EISA set allocation percentages and listed the allowed purposes for the use of funds, which include strategic planning, consultant services, and energy audits. EISA identified fourteen types of activities for the use of funds including the option for any other appropriate activity, as determined by the Secretary of Energy in consultation with the Administrator of the EPA, the Secretary of Transportation, and the Secretary of Housing and Urban Development. Eligibility requirements include payment of prevailing wage rates, submission of a strategic plan, and sharing of information.

Section 40552 expands the types of activities approved for the use of funds to include programs for financing capital investments, projects, and programs for energy efficiency, renewable energy, and zero-emission transportation and associated infrastructure. Activities may include loan programs, performance contracting programs, and programs that allow rebates, grants, or other incentives.

Appropriations of $550 million are provided in Division J, Title III.

Sec. 40553. Survey, analysis, and report on employment and demographics in the energy, energy efficiency, and motor vehicle sectors of the United States.[80]

Section 40553 directs the Secretary of Energy to establish an "Energy Jobs Council." The Council will have members from DOE (selected from EIA and state energy office members serving on the State Energy Advisory Board), and members of other agencies including the Department of Commerce, Bureau of the Census, and the Bureau of Labor Statistics. The Council shall (a) conduct a survey of employers in the energy, energy efficiency, and motor vehicle sectors of the economy of the United States; and (b) perform an analysis of the employment figures and demographics in those sectors.

In conducting the survey and analysis, the Council shall consult with key stakeholders, including—

> (A) ... the heads of relevant federal agencies and offices, including—
>
> (i) the Secretary of Commerce;
>
> (ii) the Secretary of Transportation;
>
> (iii) the Director of the Bureau of the Census;

[79] Section 41101 requires that all laborers and mechanics employed by contractors or subcontractors working on projects receiving funding assistance under Division D be paid wages at locally prevailing rates in accordance with the Davis-Bacon Act. See "Title XI—Wage Rate Requirements."

[80] Prepared by Richard J. Campbell, Specialist in Energy Policy.

(iv) the Commissioner of the Bureau of Labor Statistics; and

(v) the Administrator of the Environmental Protection Agency;

(B) States;

(C) the State Energy Advisory Board established by [EPCA Section 365(g)] (42 U.S.C. §6325(g)); and

(D) energy industry trade associations.

Not later than one year after the date of enactment of the IIJA, and annually thereafter, the Secretary is to make publicly available on the DOE website a report entitled the "U.S. Energy and Employment Report," describing employment figures and demographics in the energy, energy efficiency, and motor vehicle sectors of the United States. The report shall include employment figures and demographic data sorted by each technology, subtechnology, and fuel type of those sectors, and organized by each state, territory of the United States, the District of Columbia, and each county (or equivalent jurisdiction) in the United States.

Sec. 40554. Assisting Federal Facilities with Energy Conservation Technologies grant program.

Section 40554 authorizes appropriations for $250 million for FY2022 to provide grants under Section 546(b) of the National Energy Conservation Policy Act (NECPA, P.L. 95-619; 42 U.S.C. §8256(b)). Section 546(b) of NECPA, as amended, authorizes the Secretary of Energy to establish a federal energy efficiency fund. The fund is to be used to award competitive grants to federal agencies to assist them in meeting federal energy and water conservation requirements. DOE awards these competitive grants through the Assisting Federal Facilities with Energy Conservation Technologies (AFFECT) grant program.

Appropriations of $250 million are provided in Division J, Title III.

Sec. 40555. Rebates.

Sections 1005 and 1006 of the Energy Act of 2020 (P.L. 116-260) direct the Secretary of Energy to establish rebate programs. The extended product system rebate program (Section 1005) is to encourage the replacement of energy inefficient electric motors. Section 1006 is to encourage the replacement of energy inefficient transformers.

Section 40555 of the IIJA authorizes $10 million to be appropriated to each of these rebate programs for the period of FY2022 and FY2023. Appropriations totaling $20 million are provided in Division J, Title III.

Sec. 40556. Model guidance for combined heat and power systems and waste heat to power systems.

This section pertains to the deployment of combined heat and power systems and waste heat to power systems.[81] The section directs the Secretary of Energy in consultation with FERC and other appropriate entities to (1) review existing rules and procedures to identify barriers to the deployment of combined heat and power systems and waste heat to power systems, and (2) issue model guidance for best practices to encourage the deployment of combined heat and power systems and waste heat to power systems while ensuring the safety and reliability of the electric

[81] Combined heat and power system is defined in Section 371 of the Energy Policy and Conservation Act to be "a facility that—(A) simultaneously and efficiently produces useful thermal energy and electricity; and (B) recovers not less than 60 percent of the energy value in the fuel (on a higher-heating value basis) in the form of useful thermal energy and electricity." Waste heat to power system is defined in Section 40556 of the IIJA as "a system that generates electricity through the recovery of waste energy."

power system. The review is to take place within 180 days of the enactment of the IIJA. The model guidance is to be issued no later than 18 months after the enactment of the IIJA. The model guidance is to include certain factors for consideration: the appropriateness of using standards or procedures for interconnection service that vary according to relevant characteristics; the appropriateness of establishing fast-track procedures for interconnection service; the value of consistency with federal interconnection rules; the best practices used to model outage assumptions and contingencies to determine fees or rates for additional services; the appropriate duration, magnitude, or usage of demand charge ratchets; potential alternative arrangements with respect to the procurement additional services; and outcomes that may result from increased use of combined heat and power systems and waste heat to power systems.

This section defines terms or references definitions in statute. The section defines "additional services" and "waste heat to power system." The section references other terms defined in PURPA including "electric consumer," "electric utility," "interconnection service," "nonregulated electric utility," and "state regulatory authority." The section also references terms defined in EPCA Section 371 including "combined heat and power system" and "waste energy."

Title VI—Methane Reduction Infrastructure

Sec. 40601. Orphaned well site plugging, remediation, and restoration.[82]

Section 40601 amends 42 U.S.C. §15907, directing the Secretary of the Interior to establish multiple programs related to plugging, remediating, and reclaiming orphaned oil and gas wells. The Secretary shall report specified information related to these grant activities to specified committees in Congress, on an annual basis.

The Secretary shall establish a program to plug, remediate, and reclaim orphaned wells located on lands managed by the Department of the Interior (DOI) and the Department of Agriculture. The Secretary shall cooperate and consult with the Secretary of Agriculture, affected Indian tribes, affected states, the Secretary of Energy, and the Interstate Oil and Gas Compact Commission. The Secretary shall periodically review and reduce the inventory of all idled wells on federal land. $250 million is authorized to be appropriated for this program.

The Secretary shall provide to states initial grants, formula grants, and performance grants for indicated activities related to plugging, remediation, and reclamation of orphaned wells. $775 million is authorized to be appropriated for the initial grants. $2,000 million is authorized to be appropriated for the formula grants. $1,500 million is authorized to be appropriated for the performance grants.

The Secretary shall establish a program to provide grants to Indian tribes for indicated activities related to plugging, remediation, and reclamation of orphaned wells. In lieu of a grant, Indian tribes may request that the Secretary administer and carry out the indicated plugging, remediation, and reclamation activities. $150 million is authorized to be appropriated for these activities.

The Secretary of Energy, in cooperation with the Secretary of the Interior and the Interstate Oil and Gas Compact Commission, shall provide technical assistance to the federal land management agencies, states, and Indian tribes to support practical and economical remedies for environmental problems caused by orphaned wells. $30 million is authorized to be appropriated to the Department of Energy for these activities. $2 million is authorized to be appropriated to DOI for a cooperative agreement with the Interstate Oil and Gas Compact Commission.

[82] Prepared by Brandon S. Tracy, Analyst in Energy Policy.

Appropriations totaling $4,677 million (including $2 million for the Interstate Oil and Gas Compact Commission) for this section are provided to DOI by Division J, Title VI. Appropriations totaling $30 million for this section are provided to DOE by Division J, Title III.

Title VII—Abandoned Mine Land Reclamation[83]

Sec. 40701. Abandoned Mine Reclamation Fund authorization of appropriations.

Section 40701 authorizes a transfer from the General Fund of the U.S. Treasury to provide $11.293 billion in emergency appropriations to the Abandoned Mine Reclamation Fund.[84] The $11.293 billion would fund grants to eligible states and tribes based on relative percent of coal production prior to 1977, and the total amount available to each eligible state or tribe would be disbursed as grants in equal installments divided over the 15-year period.

As part of this formula, Section 40701 requires that each eligible state or tribe receive at least a total of $20 million over the 15-year period, to the extent that the amount needed for reclamation projects within that state or on tribal lands is not less than $20 million. Section 40701 limits the use of grants from the $11.293 billion to eligible states and tribes for the reclamation of abandoned coal mining sites under the priorities specified in Section 403(a),[85] Section 403(b),[86] and emergency projects under Section 410[87] of the Surface Mining Control and Reclamation Act (SMCRA). In addition to these priorities in Section 403 of SMCRA, Section 40701 of the IIJA authorizes eligible states and tribes to consider AML projects that may provide employment to current and former workers of the coal industry.

Appropriations totaling $11.293 billion are provided by Division J, Title VI.

Sec. 40702. Abandoned mine reclamation fee.

Section 40702 of the IIJA extends the authority in Section 402 of SMCRA[88] to collect the coal reclamation fee until the end of FY2034, and decreases the fee rates from prior law by 20% for underground and surface mining, and lignite coal. The use of this funding is limited to the reclamation of coal mining sites abandoned or unreclaimed as of August 3, 1977 (the date of the SMCRA enactment). The Abandoned Mine Reclamation Fund is financed by these fees, which are collected from operators of coal mining sites based on the volume or value of coal produced, whichever is less.

With the enactment of the IIJA, the coal reclamation fee collection authorization is set to expire at the end of FY2034. If the authority to collect reclamation fees is not reauthorized, SMCRA directs the remaining balance of the Abandoned Mine Reclamation Fund to be distributed among eligible states and tribes receiving grants from the Abandoned Mine Reclamation Fund until the balance is expended. Section 40701 discussed above requires the Office of Surface Mining Reclamation and Enforcement (OSMRE), within the Department of the Interior, to evaluate the

[83] Prepared by Lance Larson, Analyst in Environmental Policy.

[84] Congress established the Abandoned Mine Reclamation Fund under Title IV of the Surface Mining Control and Reclamation Act (SMCRA). For more information, see CRS Report R46266, *The Abandoned Mine Reclamation Fund: Reauthorization Issues in the 116th Congress*, by Lance N. Larson, and CRS In Focus IF11352, *The Abandoned Mine Reclamation Fund: Issues and Legislation in the 117th Congress*, by Lance N. Larson.

[85] 30 U.S.C. §1233(a).

[86] 30 U.S.C. §1233(b).

[87] 30 U.S.C. §1240.

[88] 30 U.S.C. §1232.

$11.293 billion in grant payments to eligible states and tribes not later than 20 years after enactment. Upon that evaluation, states and tribes would be required to return any "unused funds" to the Abandoned Mine Reclamation Fund. If any such funds were returned, the amount would be credited to the fund and add to the balance available for redistribution under SMCRA.

Sec. 40703. Amounts distributed from Abandoned Mine Reclamation Fund.

Section 40703 amends Section 401(f) of SMCRA[89] to conform the dates that would determine the timing of the payout of the unappropriated balance of the Abandoned Mine Reclamation Fund, if the coal reclamation fee is not reauthorized after FY2034.

If Congress does not reauthorize the collection of the coal reclamation fee after FY2034, Section 401(f) of SMCRA directs the remaining balance of the Abandoned Mine Reclamation Fund to be distributed among eligible states and tribes receiving grants from the fund. The amounts would be based on grants in FY2035 financed with the last year of fee collections in FY2034. Payments from the fund beginning in FY2036 and subsequent fiscal years would continue at the same amount as in FY2035 until the balance of the fund is fully expended.

Sec. 40704. Abandoned hardrock mine reclamation.

Section 40704 authorizes the Sectary of the Interior to provide grants to eligible states and tribes to inventory, assess, decommission, reclaim, respond to hazardous substance releases on, and remediate abandoned hardrock mine lands, based on the need, public health and safety, and potential environmental harm, and other land use priorities. Grants to states and tribes would be awarded based either on a competitive or formula basis as determined by the Secretary, to address abandoned hardrock mining lands within a state or tribal jurisdiction. Grants authorized under this section could not be used at sites with continuing reclamation responsibility of another party under other federal or state law, or to fulfill an obligation under a settlement agreement or court order where a potentially responsible party (PRP) would fund or perform work under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).[90] Such work under CERCLA may involve "removal" or "remedial actions, and natural resource damages for which CERCLA also establishes liability.

Section 40704 authorizes appropriations of $3 billion to carry out this program. Of that amount, half would be provided as grants to states and tribes to carry out this program on lands within their respective jurisdictions. The other half would be available the Sectary of the Interior to carry out this program on federal lands, including transfers to the Secretary of Agriculture for eligible sites on National Forest System lands.

Division J provides no appropriated funds for this section.

Title X—Authorization of Appropriations for Energy Act of 2020

Several programs that were authorized in the Energy Act of 2020 (P.L. 116-260) have authorizations of appropriation increased and/or extended by Title X. In some cases, but not all, appropriations are provided in Division J.

Sec. 41001. Energy storage demonstration projects.[91]

[89] 30 U.S.C. §1231(f).

[90] For more information about CERCLA, see CRS Report R41039, *Comprehensive Environmental Response, Compensation, and Liability Act: A Summary of Superfund Cleanup Authorities and Related Provisions of the Act*, by David M. Bearden.

[91] Prepared by Richard J. Campbell, Specialist in Energy Policy.

Section 41001(a) directs the Secretary of Energy to carry out energy storage demonstration projects under Section 3201(c) of the Energy Act of 2020 (42 U.S.C. §17232(c)).

Appropriations totaling $355 million for Section 41001(a) are provided by Division J, Title III.

Section 41001 also directs the Secretary of Energy to conduct a Long-Duration Demonstration Initiative and Joint Program under Section 3201(d) of the Energy Act of 2020 (42 U.S.C. 17232(d)).

Appropriations totaling $150 million for Section 41001(b) are provided by Division J, Title III.

Sec. 41002. Advanced reactor demonstration program.[92]

Section 41002 authorizes appropriations totaling $3.211 billion for the DOE Advanced Reactor Demonstration Program (ARDP) for FY2022-FY2027. Appropriations totaling $2.477 billion for FY2022-FY2025 are provided by Division J, Title III, Energy and Water Development and Related Agencies, under the DOE Office of Clean Energy Demonstrations. ARDP is providing up to 50% of the funding for two advanced reactor demonstrations and up to 80% of the funding for the development of five other potential advanced reactor demonstration projects.

Sec. 41003. Mineral security projects.[93]

As noted above, Section 41003(a) authorizes appropriations for the National Geological and Geophysical Data Preservation Program established in Section 40203. This section authorizes approximately $8.7 million in FY2022, and $5 million for FY2023-FY2025. Appropriations totaling $23.7 million for Section 40203 are provided by Division J, Title VI.

Section 41003 also authorizes appropriations for three programs under the Energy Act of 2020:

- $127 million total authorized for the period of FY2022-FY2026 for rare earth mineral security;
- $600 million total authorized for the period of FY2022-FY2025 for critical mineral innovation, efficiency and alternatives; and
- $75 million total authorized for the period of FY2022-FY2023 for a critical material supply chain research facility.

Division J provides no appropriations for these programs.

Sec. 41004. Carbon capture demonstration and pilot programs.[94]

Section 41004(a) increases the authorization of appropriations for carbon capture large-scale pilot projects enacted in the Energy Act of 2020. The IIJA increases the authorization to a total of $937 million for FY2022-FY2025. Division J, Title III, appropriates the same amount.

Section 41004(b) increases the authorization of appropriations for carbon capture demonstration projects program enacted in the Energy Act of 2020. The IIJA increases the authorization to a total of $2.537 billion for FY2022-FY2025. Division J, Title III, appropriates the same amount.

Sec. 41005. Direct air capture technologies prize competitions.[95]

[92] Prepared by Mark Holt, Specialist in Energy Policy.

[93] Prepared by Brandon S. Tracy, Analyst in Energy Policy.

[94] Prepared by Ashley J. Lawson, Analyst in Energy Policy.

[95] Prepared by Ashley J. Lawson, Analyst in Energy Policy.

This section authorizes $115 million for FY2022 for two DAC prize competitions. The Energy Act of 2020 authorized this same amount for FY2021. Division J appropriates $115 million for the two prize competitions.

Sec. 41006. Water power projects.[96]

Section 41006 authorizes appropriations to carry out three sections of EISA (P.L. 110-140). More specifically, for EISA Section 634—the hydropower research, development, and demonstration program—Section 41006(a)(1) authorizes $36 million for FY2022-FY2025.[97] For EISA Section 635—marine energy research, development, and demonstration program—Section 41006(a)(2) authorizes $70.4 million for the period of FY2022-FY2025.[98] For EISA Section 636—national marine energy centers—Section 40116(b) authorizes $40 million for FY2022-FY2025.[99] In each case, Division J, Title III, appropriates those amounts.

Sec. 41007. Renewable energy projects.[100]

Section 41007(a) reauthorizes appropriations for geothermal energy projects enacted in the Energy Act of 2020 at a total of $84 million for FY2022-FY2025. Division J, Title III, appropriates the same amount.

Section 41007(b) authorizes appropriations for certain wind energy programs enacted in the Energy Act of 2020. The IIJA authorizes a total of $100 million for FY2022-FY2025. Division J, Title III, appropriates the same amount.

Section 41007(c) authorizes appropriations for certain solar energy programs enacted in the Energy Act of 2020. The IIJA authorizes a total of $80 million for FY2022-FY2025. Division J, Title III, appropriates the same amount.

Sec. 41008. Industrial emissions demonstration projects.[101]

Section 41008 authorizes appropriations to carry out activities under EISA Section 454(d)(3) (42 U.S.C. §17113(d)(3)), as amended by the Energy Act of 2020 (P.L. 116-260). EISA Section 454(d)(3) authorizes the Secretary of Energy to fund demonstration projects that test and validate technologies that are within focus areas described in EISA Section 454(c). Those focus areas include select industrial production processes; alternative materials that produce fewer emissions and result in fewer emissions during use; development of net-zero emissions liquid and gaseous fuels; emissions reduction in shipping, aviation, and long distance transportation; carbon capture technologies for industrial processes; other technologies that achieve net-aero emissions in nonpower industrial sectors; high-performance computing to develop advanced materials and manufacturing processes contributing to other focus areas; incorporation of sustainable chemistry and engineering principles, practices, and methodologies as determined to be appropriate by the Secretary; and other research or technology areas identified in the strategic plan.

Appropriations totaling $500 million are provided in Division J, Title III, for FY2022-FY2025.

[96] Prepared by Kelsi Bracmort, Specialist in Natural Resources and Energy Policy.

[97] 42 U.S.C. §17213.

[98] 42 U.S.C. §17214.

[99] 42 U.S.C. §17215.

[100] Prepared by Brent D. Yacobucci, Section Research Manager.

[101] Prepared by Corrie E. Clark, Specialist in Energy Policy.

Title XI—Wage Rate Requirements[102]

Sec. 41101. Wage rate requirements.

Section 41101 requires that all laborers and mechanics employed by contractors or subcontractors working on projects receiving funding assistance under Division D be paid wages at locally-prevailing rates in accordance with the Davis-Bacon Act.

Title XII—Miscellaneous

Sec. 41201. Office of Clean Energy Demonstrations.[103]

This section directs the Secretary to create a new office within DOE—the Office of Clean Energy Demonstrations—tasked with conducting project management and oversight of certain demonstration projects authorized in the Energy Act of 2020 and IIJA. The office's duties are to include proposal evaluation, oversight of project execution, and "ensuring a balanced portfolio of investments in covered projects." This title also requires a Government Accountability Office (GAO) study of the office's performance within three years. The Biden Administration proposed such an office as part of its FY2022 budget request.[104]

Division J creates a new budget heading for the office and provides up to 3% of annual demonstration project appropriations for program direction. Appropriations for demonstration projects are listed in the sections of this report describing those authorizations.

Division G—Other Authorizations

Title XI—Clean School Buses and Ferries[105]

Sec. 71101. Clean school bus program.

This section establishes the Clean School Bus Program within EPA to provide competitive grants and rebates for the replacement of existing school buses with alternative fuel (e.g., operated entirely or in part with natural gas, hydrogen, or biofuels) and zero emission buses (i.e., produce no pollutants or GHG from the tailpipe). Eligible entities are to include those providing school bus service to one or more public school systems or purchasing school buses, contractors involved in the sale of vehicles, infrastructure, and other relevant equipment, and nonprofit school transportation association. At least 50% of allocated funds are to be provided for grants to replace existing buses with zero-emission buses, exclusively. EPA is directed to develop an education and outreach program and submit an annual report to Congress evaluating the implementation of this section.

Appropriations totaling $5 billion are provided in Division J, Title VI, for the period of FY2022-FY2026.

Sec. 71102. Electric or low-emitting ferry pilot program.

[102] Prepared by Brent D. Yacobucci, Section Research Manager.

[103] Prepared by Ashley J. Lawson, Analyst in Energy Policy.

[104] For more information see CRS Report R46857, *Energy and Water Development: FY2022 Appropriations*, by Mark Holt and Corrie E. Clark.

[105] Prepared by Melissa N. Diaz, Analyst in Energy Policy.

The Secretary of Transportation is directed to establish a pilot program to provide grants to reduce emissions from ferries through the purchase of electric or low-emitting ferries, electrification of existing ferries, or implementation of other technology that reduces emissions from existing ferries. Low-emitting ferries include those operated with biofuels, natural gas, and hydrogen.

Appropriations totaling $250 million are provided in Division J, Title VIII, for the period of FY2022-FY2026.

Division I—Other Matters

Sec. 90002. Strategic Petroleum Reserve drawdown and sale.[106]

This section directs the Secretary of Energy to sell up to 87.6 million barrels of crude oil from the Strategic Petroleum Reserve (SPR) during the period of FY2028-FY2031 and deposit funds received in the general fund of the Treasury. Crude oil sales under this section could be less than prescribed, as the Secretary is not to sell SPR crude oil once sales receipts reach $6.1 billion. Additionally, minimum SPR volumes are decreased to protect the President's ability to authorize limited SPR drawdowns to prevent or reduce impacts of domestic supply interruptions (42 U.S.C. §6241(h)). Since 2015, including this drawdown and sale, Congress has enacted eight laws mandating the sale of up to 358.6 million barrels of SPR crude oil. This represents more than half of SPR inventories held in 2015.[107]

Division J—Appropriations

General Appropriations[108]

In most cases, energy programs authorized in Division D receive appropriations in Division J, Title III, (Energy and Water Development and Related Agencies) equal to those authorizations. However, as noted above in specific sections, some sections in Division D, as well as sections in other Divisions, receive appropriations in other titles (e.g., Title VI—Department of the Interior, Environment, and Related Agencies). In one case, the Pipeline and Hazardous Materials Safety Administration, authorization and appropriation are both provided in Division J.

Pipeline and Hazardous Materials Safety Administration[109]

Congress has had ongoing concerns about aging pipeline infrastructure in the nation's natural gas distribution systems, both in terms of risks to public safety and environmental impacts.[110] As DOE stated in a 2017 report, "many policymakers and the utilities responsible for delivering natural gas to customers broadly recognize the need to accelerate ongoing efforts to replace aging

[106] Prepared by Phillip Brown, Specialist in Energy Policy. For more information on prevailing wage requirements, see CRS In Focus IF11927, *Federally Funded Construction and the Payment of Locally Prevailing Wages*, by David H. Bradley and Jon O. Shimabukuro.

[107] For more information, see CRS Congressional Distribution Memo, *Strategic Petroleum Reserve: Mandated and Modernization Oil Sales*, by Phillip Brown (available to congressional clients from author).

[108] Prepared by Brent D. Yacobucci, Section Research Manager.

[109] Prepared by Paul W. Parfomak, Specialist in Energy Policy.

[110] See, for example, U.S. Congress, House Committee on Energy and Commerce, Subcommittee on Energy, *Legislative Solutions to Make Our Nation's Pipelines Safer*, committee print, 116th Cong., 1st sess., June 19, 2019.

infrastructure while embracing new approaches to operations and maintenance."[111] Upgrading or replacing natural gas distribution infrastructure involves substantial costs and capital investment, however, which may increase natural gas rates, generally, and which may pose particular challenges for publicly owned (e.g., municipal) gas utilities with constrained budgets and limited access to capital.

This section authorizes a new Natural Gas Distribution Infrastructure Safety and Modernization Grant Program to be administered by the Pipeline and Hazardous Materials Safety Administration (PHMSA) within DOT. The program will provide grants to municipal or community-owned natural gas distribution utilities (excluding for-profit utilities) to repair, rehabilitate, or replace some or all of their pipeline systems in order to reduce safety incidents and "avoid economic losses." The section requires PHMSA to establish procedures for awarding grants that would consider the risk profile of the existing pipeline system (including the propensity for leakage), job creation potential, potential benefits to rural and urban communities, and economic impact or growth. No more than 12.5% of the grant funds may be awarded to a single municipality or community-owned utility. Funds available under the program are a total appropriation of $1.0 billion made available in $200 million increments annually from FY2022 to FY2026.

[111] Department of Energy, *Natural Gas Infrastructure Modernization Programs at Local Distribution Companies: Key Issues and Considerations*, January 2017, p. 5.

Appendix A. Appropriations

In most cases, appropriations for energy and minerals provisions are included in Division J, Title III. Further, in most cases, total appropriations match the amounts authorized in earlier sections of the act. **Table A-1** provides a summary of appropriations provided by the act organized by the authorizing section. Cases where authorizations and appropriations do not match are noted below the table. In some cases, Division J specifies the fiscal year for appropriations—those are noted in the table under the corresponding year. Cases where Division J does not specify the fiscal year are listed in the column "Unspecified Year."

Table A-1. Energy and Minerals Appropriations by Section for P.L. 117-58

$ millions

Section	Unspecified Year	FY2022	FY2023	FY2024	FY2025	FY2026	Total[a]
Division A—Surface Transportation							
Title I—Federal-Aid Highways							
Subtitle D—Climate Change							
Sec. 11401[b]		300	400	500	600	700	2,500
Sec. 11402	150						150
Sec. 11403[c]		1,234	1,258	1,284	1,309	1,335	6,420
Subtitle E—Miscellaneous							
Sec. 11506(e)[d]		5	5	5	5	5	25
Division D—Energy							
Title I—Grid Infrastructure and Resiliency							
Subtitle A—Grid Infrastructure Resilience and Reliability							
Sec. 40101		1,000	1,000	1,000	1,000	1,000	5,000
Sec. 40103(b)		1,000	1,000	1,000	1,000	1,000	5,000
Sec. 40103(c)		200	200	200	200	200	1,000
Sec. 40106		10	10	10	10	10	50
Sec. 40107		600	600	600	600	600	3,000
Sec. 40109	500						500
Sec. 40112		89	89	89	89		355
Sec. 40113[e]							0
Subtitle B—Cybersecurity							
Sec. 40124		50	50	50	50	50	250
Sec. 40125(b)		50	50	50	50	50	250
Sec. 40125(c)	50						50

Section	Unspecified Year	FY2022	FY2023	FY2024	FY2025	FY2026	Total[a]
Sec. 40125(d)	50						50
Title II—Supply Chains for Clean Energy Technologies							
Sec. 40201		64	64	64	64	64	320
Sec. 40202[f]							0
Sec. 40203		9	5	5	5		24
Sec. 40204		167					167
Sec. 40205	140						140
Sec. 40207[g]	135	1,200	1,200	1,200	1,200	1,200	6,315
Sec. 40208		40	40	40	40	40	200
Sec. 40209		150	150	150	150	150	750
Sec. 40210[h]							0
Title III—Fuels and Technology Infrastructure Investments							
Subtitle A—Carbon Capture, Utilization, Storage and Transportation Infrastructure							
Sec. 40302		41	65	67	68	69	310
Sec. 40303		20	20	20	20	20	100
Sec. 40304[i]		3	2,097				2,100
Sec. 40305		500	500	500	500	500	2,500
Sec. 40306[j]	50	5	5	5	5	5	75
Sec. 40308[k]		700	700	700	700	700	3,500
Subtitle B—Hydrogen Research and Development							
Sec. 40314		1,900	1,900	1,900	1,900	1,900	9,500
Subtitle C—Nuclear Energy Infrastructure							
Sec. 40323		1,200	1,200	1,200	1,200	1,200	6,000
Subtitle D—Hydropower							
Sec. 40331	125						125
Sec. 40332	75						75
Sec. 40333[l]		277	277				534
Sec. 40334	10						10
Subtitle E—Miscellaneous							
Sec. 40342		100	100	100	100	100	500
Title V—Energy Efficiency and Building Infrastructure							
Subtitle A—Residential and Commercial Energy Efficiency							
Sec. 40502	250						250

Section	Unspecified Year	FY2022	FY2023	FY2024	FY2025	FY2026	Total[a]
Sec. 40503	40						40
Subtitle B—Buildings							
Sec. 40511		45	45	45	45	45	225
Sec. 40512	10						10
Sec. 40513	10						10
Subtitle C—Industrial Energy Efficiency							
Sec. 40521(a)-(h)		30	30	30	30	30	150
Sec. 40521(i)		80	80	80	80	80	400
Sec. 40534	50						50
Subtitle D—Schools and Nonprofits							
Sec. 40541		100	100	100	100	100	500
Sec. 40542	50						50
Subtitle E—Miscellaneous							
Sec. 40551	3,500						3,500
Sec. 40552	550						550
Sec. 40554	250						250
Sec. 40555	20						20
Title VI—Methane Reduction Infrastructure							
Sec. 40601[m]		4,707					4,707
Title VII—Abandoned Mine Land Reclamation							
Sec. 40701	11,293						11,293
Sec. 40704[n]							0
Title X—Authorization of Appropriations for Energy Act of 2020[o]							
Sec. 41001(a)[p]	355						355
Sec. 41001(b)[q]	150						150
Sec. 41002[r]		677	600	600	600		2,477
Sec. 41003[s]							0
Sec. 41004(a)		387	200	200	150		937
Sec. 41004(b)		937	500	500	600		2,537
Sec. 41005	115						115
Sec. 41006(a)(1)	36						36
Sec. 41006(a)(2)	70						70
Sec. 41006(b)	40						40

Section	Unspecified Year	FY2022	FY2023	FY2024	FY2025	FY2026	Total[a]
Sec. 41007(a)	84						84
Sec. 41007(b)	100						100
Sec. 41007(c)	80						80
Sec. 41008		100	100	150	150		500
Division G—Other Authorizations							
Title XI—Clean School Buses and Ferries							
Sec. 71101		1,000	1,000	1,000	1,000	1,000	5,000
Sec. 71102		50	50	50	50	50	250
Division J—Appropriations[t]							
Title VIII—Transportation, Housing and Urban Development, and Related Agencies							
Pipeline and Hazardous Materials Safety Administration		200	200	200	200	200	1,000

Source: CRS analysis of P.L. 117-58.

Notes:

a. Totals may not sum due to rounding.

b. Appropriation from the Highway Trust Fund as directed in Section 11101. Estimate from FHWA, *Highway Authorizations Under the Bipartisan Infrastructure Law.*

c. Appropriation from the Highway Trust Fund as directed in Sections 11101 and 11108. Estimate from FHWA, *Highway Authorizations Under the Bipartisan Infrastructure Law.*

d. Section 11506 authorizes $200 million annually for the period of FY2022-FY2026 for the Appalachian Regional Commission, including $5 million annually for the Appalachian Regional Energy Hub Initiative. Division J appropriates $200 million annually for the Commission but does not specify a funding level for the hub initiative.

e. Section 40113 authorizes a nonreimburseable total of $110 million.

f. Section 40202 extends the existing authorization of $64 million annually through FY2031.

g. Section 40207 directs the Secretary to establish two programs, one in the Office of Energy Efficiency and Renewable Energy, and one in the Office of Fossil Energy; appropriations for both programs are included under the Energy Efficiency and Renewable Energy heading in Division J, Title III.

h. Section 40210 authorizes $100 million annually for FY2021-FY2024.

i. Section 40304 authorizes $600 million annually for FY2022-FY2023 and $300 million annually for FY2024-FY2026.

j. EPA is appropriated $50 million for State grants for Class VI injection well programs and $25 million total for EPA to use in permitting Class VI injection wells.

k. Division J provides funds for front-end engineering and design program activities authorized by 42 U.S.C. §16292, as amended by Section 40303 of Division D. The amended text authorizes two such programs—one for carbon capture technologies and one for CO_2 transport infrastructure. Division J does not specify how DOE should distribute appropriations between the two programs.

l. Section 40333 authorizes a total of $533.6 million for FY2022.
m. Amounts reflect combined DOI and DOE appropriations from Titles VI and III, respectively.
n. Section 40704 authorizes a total of $3 billion.
o. Funds in this section exclude appropriations provided in Division J for programs or activities accounted for in above sections of the IIJA.
p. Section 41001(a) authorizes these funds in FY2022-FY2025. Division J does not specify the fiscal years.
q. Section 41001(b) authorizes these funds in FY2022-FY2025. Division J does not specify the fiscal years.
r. Section 41002 authorizes a total of $3.211 billion for FY2022-FY2027 (amounts vary by year).
s. In addition to the funds authorized for the program in Section 40203 and appropriated in Division J, Section 41003 authorizes appropriations totaling $802 million over five years for other activities. Division J does not provide funds for those activities.
t. Funds in this section exclude appropriations provided in Division J for programs or activities authorized in above divisions of the IIJA.

Appendix B. Abbreviations

AEO—Annual Energy Outlook

AFFECT—Assisting Federal Facilities with Energy Conservation Technologies

AMO—Advanced Manufacturing Office

ARDP—Advanced Reactor Demonstration Program

ATVM—Advanced Technology Vehicles Manufacturing loan program

BLM—Bureau of Land Management

CCUS—carbon capture, utilization and storage

CBECS—Commercial Buildings Energy Consumption Survey

CERCLA—Comprehensive Environmental Response, Compensation, and Liability Act

CIFIA—carbon dioxide transportation infrastructure finance and innovation program

CO_2—carbon dioxide

DAC—direct air capture

DHS—Department of Homeland Security

DOE—Department of Energy

DOI—Department of the Interior

DOT—Department of Transportation

DRF—Disaster Relief Fund

ECPA—Energy Conservation and Production Act

EECBG—Energy Efficiency and Conservation Block Grant

E-ISAC—Electricity Information Sharing and Analysis Center

EIA—Energy Information Administration

EISA—Energy Independence and Security Act of 2007

EPA—Environmental Protection Agency

EPAct05—Energy Policy Act of 2005

EPAct92—Energy Policy Act of 1992

EPCA—Energy Policy and Conservation Act

ESCC—Electricity Subsector Coordinating Council

EV—electric vehicle

FEMA—Federal Emergency Management Agency

FEMP—Federal Energy Management Program

FERC—Federal Energy Regulatory Commission

FHWA—Federal Highway Administration

FS—Forest Service
GAO—Government Accountability Office
HMGP—Hazard Mitigation Grant Program
IAC—industrial assessment center
IEA—International Energy Agency
IIJA—Infrastructure Investment and Jobs Act
IoT—Internet of Things
MW—megawatts
MWh—megawatt-hours
NARUC—National Association of Regulatory Utility Commissioners
NECPA—National Energy Conservation Policy Act
NEMS—National Energy Modeling System
NERC—North American Electric Reliability Corporation
NIETC—National Interest Electric Transmission Corridor
NIST—National Institute of Standards and Technology
NRC—Nuclear Regulatory Commission
NSF—National Science Foundation
OSMRE—Office of Surface Mining Reclamation and Enforcement
PHMSA—Pipeline and Hazardous Materials Safety Administration
PMA—power marketing administration
PRP—potentially responsible party
PURPA—Public Utility Regulatory Policies Act of 1978
SBA—Small Business Administration
SDWA—Safe Drinking Water Act
SEP—State Energy Program
SMCRA—Surface Mining Control and Reclamation Act
SMR—small modular reactor
SPR—Strategic Petroleum Reserve
TIFIA—Transportation Infrastructure Finance and Innovation Act
UIC—underground injection control
USGS—U.S. Geological Survey
WAP—Weatherization Assistance Program
WIFIA—Water Infrastructure Finance and Innovation Act

Author Information

Brent D. Yacobucci, Coordinator
Section Research Manager

Kelsi Bracmort
Specialist in Natural Resources and Energy Policy

David H. Bradley
Specialist in Labor Economics

Phillip Brown
Specialist in Energy Policy

Richard J. Campbell
Specialist in Energy Policy

Corrie E. Clark
Analyst in Energy Policy

Laura B. Comay
Specialist in Natural Resources Policy

Melissa N. Diaz
Analyst in Energy Policy

Mark Holt
Specialist in Energy Policy

Lance N. Larson
Analyst in Environmental Policy

Ashley J. Lawson
Analyst in Energy Policy

Martin C. Offutt
Analyst in Energy Policy

Paul W. Parfomak
Specialist in Energy Policy

Michael Ratner
Specialist in Energy Policy

John F. Sargent Jr.
Specialist in Science and Technology Policy

Charles V. Stern
Specialist in Natural Resources Policy

Brandon S. Tracy
Analyst in Energy Policy

Disclaimer