



Transportation electrification and energy funding in the 2021 Infrastructure Investment and Jobs Act

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Overview

President Biden signed the \$1.2 trillion Infrastructure Investment and Jobs Act (IIJA), which includes new and baseline funding for roads and bridges, rail, transit, ports, airports, the electric grid, water systems, and broadband. Portions of this funding will specifically go to EV charging, power and grid projects, bus electrification, and climate resilience.

President Biden also issued an [executive order](#) that outlines the administration's priorities for implementing the law and setting up a task force to oversee the process. The roughly \$1.2 trillion IIJA contains an estimated \$550 billion in new spending above baseline levels over 5 years.

The Build Back Better reconciliation budget bill underway could add an additional \$500 billion in new infrastructure spending over 10 years (\$250 billion over 5 years). Combined with the IIJA (\$550 billion + \$250 billion), the federal government could be spending \$160 billion above baseline each year for the next 5 years.

Utility and renewable energy trade groups heralded the bill's passage, saying it would help spur the shift toward emissions-free electricity through increased funding for transmission, hydrogen and EVs. The Edison Electric Institute, a trade group for investor-owned utilities, praised the bill's passage, saying it will make "significant investments in the critical energy infrastructure and new carbon-free technologies our industry needs to deliver a 100-percent clean energy future." The bill's spending on the electric system will help renewable energy facilities connect to the grid, according to Heather Zichal, American Clean Power Association CEO.

The IIJA will upgrade our power infrastructure to deliver clean, reliable energy across the country and deploy cutting-edge energy technology to achieve a zero-emissions future. According to the US Department of Energy (DOE), power outages cost the US economy up to \$70 billion annually. The Bipartisan Infrastructure Deal's more than \$65 billion investment includes the largest investment in clean-energy transmission and grid resources in American history. It will upgrade our power infrastructure by building thousands of miles of new, resilient transmission lines to facilitate the expansion of renewables and clean energy while lowering costs. And it will fund new programs to support the development, demonstration, and deployment of cutting-edge clean-energy technologies to accelerate our transition to a zero-emissions economy.

The IIJA will also build a national network of EV chargers. The US market share of plug-in EV sales is only one-third the size of the Chinese EV market. That needs to change. The legislation will invest \$7.5 billion to build out a national network of EV chargers in the US. This is a critical step in the president's strategy to fight the climate crisis, and it will create good US manufacturing jobs. The legislation will provide funding for deployment of EV chargers along highway corridors to facilitate long-distance travel—and within communities to provide convenient charging where people live, work, and shop. This investment will support the president's goal of building a nationwide network of 500,000 EV chargers to accelerate the adoption of EVs, reduce emissions, improve air quality, and create good-paying jobs across the country.

IJJA funding highlights for utility interests

- \$65 billion for grid infrastructure
- \$50 billion for cyber and climate resilience
- \$7.5 billion to help set up a national EV charging system
- \$5 billion for electric school buses
- \$6 billion for battery material processing grants and battery manufacturing and recycling grants
- \$2.5 billion revolving loan fund to establish the DOE as an anchor tenant for new or upgraded transmission lines. It allows the DOE to commit to up to half the capacity of the power lines and then sell the capacity to others
- \$6 billion cost-share program to support grid reliability R&D, and demonstration projects
- \$5 billion grant program for utilities, states, and tribes to bolster the grid in the face of extreme weather, wildfire, and natural disaster
- \$8 billion to set up at least four “clean” hydrogen hubs
- \$6 billion in subsidies for uneconomic nuclear power plants
- \$3.5 billion to establish four hubs for removing carbon dioxide (CO₂) from the air
- \$2.1 billion for a loan program for carbon dioxide transportation

IIJA regulatory changes and new standards for utility interests

New standards

The IIJA directs the US Department of Transportation (DOT) to update the Manual on Uniform Traffic Control Devices (MUTCD) to add EV charging stations and to include necessary updates to support the safe testing of automated-vehicle technology and any preparation necessary for the safe integration of automated vehicles onto public streets.

The IIJA provides a definition for the class 1, 2, and 3 electric bicycles and the addition of micromobility (e.g., electric scooters) as an eligible use of funds for construction of walkways and bicycle transportation facilities.

New regulations

The IIJA gives the Federal Energy Regulatory Commission (FERC) the authority to approve transmission projects in national-interest transmission corridors that are blocked by state inaction or rejection. However, FERC Commissioner Richard Glick doubts the backstop siting authority will have much practical effect. “I think it’s going to be somewhat limited in terms of its deployment,” Glick said during an October 27 webinar hosted by the Niskanen Center and the Clean Air Task Force.

[Early utility relocation](#)

Allows for states to be reimbursed for an early utility relocation project carried out prior to the completion of the environmental review for a larger, authorized surface-transportation project as long as certain requirements are met. The requirements include that the early utility relocation project didn’t influence the environmental review process for the surface-transportation project.

[Incentives for advanced cybersecurity technology investment](#)

Directs FERC to initiate a rulemaking to develop incentives that would encourage investment in cybersecurity technology and participation in cybersecurity-threat information-sharing programs.

New studies

[Study of impacts on roads from self-driving vehicles](#)

Directs the Secretary to initiate a study on the existing and future impacts of self-driving vehicles to transportation infrastructure, mobility, the environment, and safety, including impacts on the interstate system, urban roads, rural roads, corridors with heavy traffic congestion, and transportation-systems optimization. The study shall include specific recommendations for both rural and urban communities regarding the impacts of self-driving vehicles on existing transportation-system capacity.

[Report on emerging alternative fuel vehicles and infrastructure](#)

Directs the Secretary to make publicly available a report that:

- Includes an evaluation of emerging alternative fuel vehicles and projections for potential locations of emerging alternative fuel vehicle owners during the 5-year period beginning on the date of submission of the report
- Identifies areas where emerging alternative-fueling infrastructure will be needed to meet the current and future needs of drivers during the 5-year period beginning on the date of submission of the report
- Identifies specific areas, such as a lack of pipeline infrastructure, that may impede deployment and adoption of emerging alternative-fuel vehicles
- Includes a map that identifies concentrations of emerging alternative-fuel vehicles to meet the needs of current and future emerging alternative-fueling infrastructure
- Estimates the future need for emerging alternative-fueling infrastructure to support the adoption and use of emerging alternative-fuel vehicles
- Includes a tool to allow states to compare and evaluate different adoption and use scenarios for emerging alternative-fuel vehicles, with the ability to adjust factors to account for regionally specific characteristics

Study on impact of electric vehicles

Requires the Secretary of Energy to conduct a study on the cradle-to-grave environmental impact of electric vehicles.

Study on impact of forced labor in China on the electric vehicle supply chain

Requires the Secretary of Energy, in coordination with the Secretary of State, to study the impact of forced labor in China on the EV supply chain.

Research and innovation

Electric Vehicle Working Group

Establishes a 25-member electric vehicle working group, comprising a variety of federal and nonfederal stakeholders, to provide federal guidance and strategy for the development, adoption, and integration of electric vehicles into the nation's transportation and energy systems. The Secretaries of Transportation and Energy will lead the working group, and the working group is required to prepare a series of reports to Congress on barriers to electric vehicle adoption and possible opportunities and solutions.

Office of Clean Energy Demonstrations

Establishes an Office of Clean Energy Demonstrations at the DOE to coordinate activities relating to the selection, project management, and assessment of demonstration projects funded by the Department.

Clean hydrogen research and development program

Reestablishes and expands the scope of the DOE's hydrogen R&D program to advance crosscutting R&D for purposes of demonstration and commercialization of clean hydrogen production, processing, delivery and end-use application technologies.

Surface Transportation Reauthorization Act of 2021

Roads, bridges, and major projects (\$110 billion)

Includes the Surface Transportation Reauthorization Act and Surface Transportation Investment Act. Funds a new, dedicated grant program to replace and repair bridges and increases funding for the major project competitive grant programs. At the same time, the package preserves the 90-10 split of federal highway aid to states. Includes numerous pilot programs, including a vehicle-miles-traveled user fee pilot. Funds 10 regional Centers of Excellence for Transportation Resilience and Adaptation and 1 national center to receive grants not less than \$5 million.

EV charging (\$7.5 billion)

Funds for alternative-fuel corridors and to build out a national network of electric vehicle charging infrastructure to facilitate long-distance travel and to provide convenient charging where people live, work, and shop. The federal funding will have a particular focus on rural, disadvantaged, and hard-to-reach communities.

Grants for charging and fueling infrastructure

Directs the Secretary to establish a grant program for Alternative Fuel Corridors, as well as a set-aside grant program for community grants. These programs are designed to strategically deploy publicly accessible EV charging infrastructure, hydrogen-fueling infrastructure, propane-fueling infrastructure, and natural gas-fueling infrastructure along designated alternative-fuel corridors or in certain other locations that will be accessible to all drivers of electric vehicles, hydrogen vehicles, propane vehicles, and natural gas vehicles.

Eligible entities under the program are all public entities and are comprised of a state or political subdivision of a state, a metropolitan planning organization, a unit of local government, a special purpose district or public authority with a transportation function, including a port authority, an Indian tribe, and a territory of the US.

Applications must include a description of how the eligible entity has considered public accessibility relative to the proposed project, collaborative engagement with stakeholders, the location of the proposed project, responsiveness to technology advancements, and the long-term operation and maintenance of the proposed project.

In selecting eligible entities to receive grants, the Secretary must consider whether an application would improve alternative-fueling corridor networks, meet the current or anticipated market for charging or alternative-fueling infrastructure, enable or accelerate the construction of charging or alternative-fueling infrastructure that would be unlikely to be completed without federal assistance, and support a long-term competitive market for alternative-fueling and charging infrastructure. Additionally, the Secretary must consider geographic diversity among applicants, the finances and experience of private entity contractors, and the adequacy of agreements between eligible entities and their private entity contractors.

Grants for the alternative-fuel corridors are to be used to contract with a private entity for acquisition and installation of publicly accessible alternative-fuel vehicle charging and fueling infrastructure that is directly related to the charging or fueling of a vehicle. Such infrastructure is

to be located along an alternative-fuel corridor either designated under section 151, or by a state or group of states on the condition that any affected Indian tribes are consulted before the designation. Eligible entities may use a portion of grant funds to provide a private entity operating assistance for the first 5 years of operations after infrastructure installation.

Eligibility includes propane fueling infrastructure but limits it to infrastructure for medium- and heavy-duty vehicles.

Fifty percent of the total program funds will be made available each fiscal year for community grants to install EV charging and alternative fueling in locations on public roads, schools, parks, and in publicly accessible parking facilities. These grants will be prioritized for rural areas, low- and moderate-income neighborhoods, and communities with low ratios of private parking or high ratios of multiunit dwellings.

The federal cost-share for a project may not exceed 80%. Further, as a condition of contracting with an eligible entity, a private entity must agree to pay the nonfederal share of project costs.

Section 1401 would also make the process of designating alternative-fuel corridors periodic and recurring, and also modifies a reporting deadline.

The amount of a grant shall not be more than \$15 million.

Formula carbon reduction program

Establishes a carbon-reduction program to reduce transportation emissions. Eligible projects include:

- A project to establish or operate a traffic monitoring, management, and control facility or program, including advanced truck-stop electrification systems
- A public transportation project that is eligible for assistance under section 142 (public transportation)
- The construction, planning, and design of on-road and off-road trail facilities for pedestrians and bicyclists
- A project for advanced transportation and congestion management technologies
- A project for the deployment of infrastructure based intelligent transportation systems capital improvements
- The installation of vehicle to infrastructure communications equipment, including retrofitting dedicated short-range communications (DSRC) technology
- A project to replace streetlighting and traffic control devices with energy-efficient alternatives
- The development of a carbon-reduction strategy

This section also establishes that two years after the date of enactment a state, in consultation with any metropolitan planning organization designated within the state, shall develop a carbon-reduction strategy that supports efforts to reduce greenhouse gas emissions, identifies projects and strategies to reduce transportation emissions, supports the achievement of targets for the reduction of transportation emissions, quantifies the total carbon emissions from the production,

transport, and use of materials used in the construction of transportation facilities within the state, and is appropriate to the population density and context of the state. Sixty-five percent of funding under this program would be suballocated by population. Also permits, at the request of a state, that the Secretary shall provide technical assistance in the development of the carbon-reduction strategy.

Reduction of truck emissions at port facilities

Establishes a program to reduce idling and emissions at port facilities. This section requires the Secretary to study how ports would benefit from electrification and to study emerging technologies that reduce emissions from idling trucks. This section requires the Secretary to coordinate and fund projects through competitive grants that reduce port-related emissions from idling trucks. This Section requires that any project funded under a grant under this section shall be treated as a project on a Federal-aid highway. This section requires the Secretary to submit a report to Congress detailing the status and effectiveness of the program.

Surface Transportation Block Grant (STBG) Program for the Transportation Alternatives Program (TAP)

Increases the amount of funding set aside within the STBG for TAP. New eligibilities to STBG including construction of wildlife crossing structures, electric vehicle charging infrastructure and vehicle-to-grid infrastructure, installation and deployment of intelligent transportation technologies, projects that facilitate intermodal connections between emerging transportation technologies, resilience features, cybersecurity protections, and rural barge landings, docks, and waterfront infrastructure projects, and the construction of certain privately owned ferry boats and terminals.

Congestion Mitigation and Air Quality Improvement Program

Adds eligibility for shared micromobility, including bike-share and shared scooter systems, as well as for the purchase of medium- or heavy-duty zero-emissions vehicles and related charging equipment.

University Transportation Centers (\$95 million)

This funding supports the University Transportation Centers (UTC) Program, which advances state-of-the-art transportation research and technology.

Reconnecting Communities (\$1 billion)

Total of \$1 billion between contract authority and new appropriations. Funds for projects that remove barriers to opportunity caused by legacy infrastructure. The program will provide dedicated funding for planning, design, demolition, and reconstruction of street grids, parks, or other infrastructure.

Surface Transportation Investment Act of 2021

Passenger and freight rail (\$66 billion)

Provides funding for the Amtrak National Network for new service and dedicated funding to the Northeast Corridor, which has incurred a severe repair backlog after Hurricane Sandy.

Increases funding for freight rail and safety. Includes the Surface Transportation Investment Act rail reauthorization.

Safety (\$11 billion)

Funds highway and pedestrian safety programs as well as pipeline safety and repair. Includes Surface Transportation Investment Act safety reauthorization.

Pipeline and Hazardous Materials Safety Administration modernization (\$1 billion)

This program would provide grants to community-owned utilities to replace outdated cast-iron and bare-steel distribution pipes—some of which are more than 100 years old. This investment will reduce injuries and fatalities and prepare infrastructure for cleaner fuels, such as hydrogen and bioblends.

Grants for buses and bus facilities (\$4 million)

Increases the minimum allotment for states and territories under section 5339(a) from \$1.75 million to \$4 million and encourages the use of innovative procurement practices. It raises the rural set-aside in the section 5339(b) “Buses and Bus Facilities” competitive grant program to 15%, up from the current 10% requirement. Part of the Public Transportation Reauthorization.

The section ensures that lower-emissions buses and vehicles, including natural gas-powered buses and vehicles, are eligible for no less than 25% of funds made available under the program.

For applicants for zero-emissions vehicles grants under the section 5339(c) and section 5339(b) programs, the section requires submission of a zero-emissions fleet transition plan, including a workforce transition plan, and provides funding for such activities.

New clean transportation programs

Public transit (\$39.2 billion)

Funds nation’s transit system repair backlog, which the DOT estimates is more than 24,000 buses, 5,000 rail cars, 200 stations, and thousands of miles of track, signals, and power systems. Expands transit systems, supports clean transit options, and increases accessibility for seniors and persons with disabilities. Provides dollars to state and local governments to buy zero-emissions and low-emissions buses.

The Low-No Program (\$5.25 billion) provides funding to state and local governments for the purchase or lease of zero-emissions and low-emissions transit buses, including acquisition, construction, and leasing of required supporting facilities. The Low-No Program will also support workforce training to ensure that diesel mechanics and other transit workers are not left behind in the transition to new technology.

Clean school buses and ferries (\$7.5 billion)

Includes historic \$5 billion for the replacement of existing school buses with zero-emissions and clean school buses, with a priority on low-income, rural, and tribal schools. Provides \$2.5 billion for the replacement of existing ferries with low-carbon ferries and to assist states with

operational costs for essential rural ferries. These investments will drive demand for American-made batteries and vehicles, creating jobs and supporting domestic manufacturing, while also removing old, dirty diesel buses and ferries from some of our most vulnerable communities.

Authorizes and appropriates \$1 billion per year for FY 2022–2026 (total \$5 billion) to implement a school bus change-out program (“Clean School Bus Program”) to reduce emissions and improve public health. Program is created by amending an expired program from the Energy Policy Act of 2005 and would be managed by the Administrator of the Environmental Protection Agency (EPA).

State or local governments, eligible contractors, and nonprofit school transportation associations are authorized to receive grant funds. Fifty percent of the funds are authorized for zero-emissions school buses, and 50% of the funds are authorized for alternative fuels and zero-emissions school buses. Funds may be prioritized for rural or low-income communities and entities that have matching funds available. The Administrator is authorized to provide funds to cover up to 100% of the costs for the replacement of the bus.

Provides \$1.25 billion for the Federal Transit Administration’s Passenger Ferry Grant Program. Directs the Secretary of Transportation to establish a \$250 million pilot program to provide grants for the purchase of electric or low-emitting ferries (using methanol, natural gas, liquefied petroleum gas, hydrogen, coal-derived liquid fuels, and biofuels). Requires that at least one grant be awarded to the state with the largest Marine Highway System and a bi-ferry service with an aging fleet. Funds are authorized and appropriated at \$50 million a year for FY 2022–2026.

Directs the Secretary of Transportation to establish a \$1 billion Basic Essential Ferry Service. Eligible places must serve at least two rural areas and have had scheduled ferry transportation services from 2015 to 2020. Funds are authorized and appropriated at \$200 million a year for FY 2022–2026. Makes operating costs an authorized use under 23 U.S.C. 147 and 23 U.S.C. 218(c).

Senate Energy and Natural Resources Energy Infrastructure Act

Power Infrastructure

(contains allocations from power, resilience, orphan wells/AML, western water, and water)

<i>Jurisdictional to ENR, included in ENR bill</i>			
	Authorized	To be funded	Notes
Grid Infrastructure, Resiliency, and Reliability	\$ 28,760,000,000	\$ 27,650,000,000	All from power infrastructure funding bucket. This includes \$12.5 billion in borrowing authority, which does not score at this level and will ultimately keep within the new spending cap.
Supply Chains for Clean Energy Technologies	\$ 8,624,000,000	\$ 7,712,000,000	Predominantly power infrastructure funding bucket, \$125 million from waste management. Not funding authorizations for out years or amendments from markup.
Fuels and Technology Infrastructure Investments	\$ 27,853,740,781	\$ 27,853,740,781	All from power infrastructure funding bucket.
Orphan Wells and Abandoned Mine Land Reclamation	\$ 19,000,000,000	\$ 16,000,000,000	All from orphan well/AML funding bucket. Amendments adopted at markup aren't funded.
Western Water	\$ 8,300,000,000	\$ 8,300,000,000	Funding is \$5 billion from western water, \$1 billion from water, and \$2.3 billion from resilience.
Resilience	\$ 9,000,000,000	\$ 9,000,000,000	All from resilience funding bucket. Includes weatherization, ecosystem restoration, and wildfires.
Legacy Roads	\$ 250,000,000	\$ 250,000,000	
Energy Act	\$ 9,041,068,000	\$ 8,307,068,000	Not funding extended authorizations for out years.
TOTAL ENR BILL	\$ 110,828,808,781	\$ 105,072,808,781	

<i>Power Infrastructure Items, non-Jurisdictional to ENR, not included in ENR bill</i>			
	Authorized	To be funded	
Hydropower		\$ 1,600,000,000	Appropriations for existing programs, authorizations not needed.

TOTAL EXPANDED POWER INFRASTRUCTURE WORKING GROUP			
	Authorized	To be funded	
	\$ 118,828,808,781	\$ 114,672,808,781	Includes borrowing authority that will not score at the level authorized.

Source: [Bipartisan Infrastructure Investment and Jobs Act Summary](#) (PDF), Senator Maria Cantwell (2021)

Grid infrastructure and reliability and power and grid (\$65 billion)

Includes the bipartisan Energy Infrastructure Act passed by the Senate Committee on Energy & Natural Resources, which includes funds for grid reliability and resiliency and support for a Grid Deployment Authority; critical minerals and supply chains for clean energy technology; key technologies like carbon capture, hydrogen, direct air capture, and energy efficiency; and energy demonstration projects from the bipartisan Energy Act of 2020.

Preventing outages and enhancing the resilience of the electric grid

Directs the DOE to establish a grant program to support activities that reduce the likelihood and consequence of impacts to the electric grid due extreme weather, wildfire, and natural disaster. This section authorizes \$5 billion for the period of FY 2022–2026.

Hazard mitigation using disaster assistance

Amends the Robert T. Stafford Disaster Relief and Emergency Assistance Act to include wildfire within the hazard mitigation program.

Electric grid reliability and resilience research, development, and demonstration

Establishes the “Program Upgrading Our Electric Grid Reliability and Resiliency” program to provide Federal financial assistance to demonstrate innovative approaches to transmission, storage, and distribution infrastructure to harden resilience and reliability and to demonstrate new approaches to enhance regional grid resilience, implemented through states by public and publicly regulated entities on a cost-shared basis. It also directs the Secretary to improve resilience, safety, and reliability and environmental protection in rural or remote areas and—in collaboration with Department of Homeland Security, the Federal Energy Regulatory Commission (FERC), and the North American Electric Reliability Corporation (NERC)—to develop a framework to assess the resilience of energy infrastructure. This section authorizes \$5 billion for the period of FY 2022–2026 for the Energy Infrastructure Federal Financial Assistance program and \$1 billion for the period of FY 2022–2026 for Rural or Remote Areas.

Utility demand response

Requires state regulators to consider establishing rate mechanisms to allow utilities to recover the costs of promoting demand-response practices in order to encourage electric utilities to promote the use of demand-response practices.

Siting of interstate electric transmission facilities

Directs the DOE to study capacity constraints and congestion when designating National Interest Electric Transmission Corridors (NIETCs). It also adds more objective criteria to the list of considerations the Secretary of Energy uses to select and designate an NIETC. The section adds that the FERC may issue permits for construction or modification of certain interstate transmission facilities if a state commission withholds or denies an application seeking approval for the siting of such facilities. It also directs the FERC to consider whether the transmission permit applicant has engaged states and nonfederal entities in good-faith consultations and in a timely manner before exercising its backstop siting authority.

Transmission facilitation program

Establishes a \$2,500,000,000 revolving loan fund to allow the DOE to serve as an “anchor-tenant” for a new transmission line or an upgrade of an existing line. The section permits the DOE to buy a certain portion of the planned capacity (not more than 50%), which it then may sell after determining that the transmission project has ensured financial viability. It also permits the DOE to issue loans to or enter into public-private partnerships with eligible transmission projects. It also authorizes \$10 million for each of FY 2022–2026 to carry out the program.

Deployment of technologies to enhance grid flexibility

Amends the Energy Independence and Security Act of 2007 to include smart grid investments that provide flexibility and help quickly rebalance the electrical system, facilitate the aggregation or integration of distributed energy resources, provide energy storage to meet fluctuating, provide voltage support, integrate intermittent generation sources, increase the network’s operational transfer capacity, and anticipate and mitigate impacts of extreme weather events or natural disasters on grid resilience. The section authorizes \$3 billion for the Smart Grid Investment Matching Grant Program.

State energy security plans

Provides assistance for the creation of state energy security plans that address all energy sources and potential hazards and provides an approach based on risk assessment and risk mitigation.

State energy program

Authorizes \$500 million for the period of FY 2022–2026 for the State Energy Program. It also amends the Energy Policy and Conservation Act to require State Energy Conservation Plans to support transmission and distribution planning activities and to allow State Energy Conservation Plans to include programs that help reduce carbon emissions in the transportation sector and accelerate the use of alternative transportation fuels for and the electrification of state government vehicles, fleet vehicles, taxis, and ride-sharing services, mass transit, school buses, ferries, and privately owned passenger and medium- and heavy-duty vehicles.

Power Marketing Administration transmission borrowing authority

Increases the Bonneville Power Administration’s (BPA’s) borrowing authority by \$10 billion to assist in the financing of the construction, acquisition, and replacement of the Federal Columbia River Power System. It also requires BPA to issue an updated financial plan that considers the projected and planned use and allocation of BPA’s borrowing authority across its mission responsibilities and requires BPA to engage with customers and stakeholders on its financial and cost management efforts.

Study of codes and standards for use of energy-storage systems across sectors

Directs the Secretary of Energy to conduct a study of types and commercial applications of codes and standards applied to stationary and mobile energy storage systems as well as those that move between stationary and mobile applications, such as EV batteries.

Demonstration of electric vehicle battery second-life applications for grid services

Directs the Secretary of Energy to establish a demonstration project for second-life applications of EV batteries as aggregated energy storage installations to provide services to the electric grid.

Columbia Basin power management

Rebalances the Columbia River Treaty by upgrading transmission capacity between Canada and the western and southwestern US and authorizes amounts equal to the aggregated amount of downstream power benefits that Canada is entitled to under the Columbia River Treaty (\$1 billion). It also authorizes \$100 million to rehabilitate and enhance water storage and hydroelectric capacity and \$10 million to study better coordination of water and power flows between British Columbia and the Pacific Northwest.

Cybersecurity and resiliency (\$47.2 billion)

Funding for cybersecurity to address critical infrastructure needs, waste management, flood and wildfire mitigation, drought, and coastal resiliency, ecosystem restoration, heat stress, and weatherization.

Enhancing grid security through public-private partnerships

Requires the Secretary, in consultation with state regulatory authorities, industry, the Electric Reliability Organization, and other relevant federal agencies, to carry out a program to promote and advance the physical security and cybersecurity of electric utilities, with priority provided to utilities with fewer resources. This section also requires a report to Congress on improving the cybersecurity of electricity distribution systems.

Incentives for advanced cybersecurity technology investment

Directs the FERC to initiate a rulemaking to develop incentives that would encourage investment in cybersecurity technology and participation in cybersecurity-threat information-sharing programs.

Rural and municipal utility advanced cybersecurity grant and technological assistance program

Directs the Secretary of Energy to establish the “Rural and Municipal Utility Advanced Cybersecurity Grant and Technical Assistance Program” to provide grants and technical assistance for utilities to detect, respond to, and recover from cybersecurity threats. This section authorizes \$250 million for the period of FY 2022–2026.

Enhanced grid security

Creates a program to develop advanced cybersecurity applications and technologies for the energy sector, a program to enhance and test emergency response capabilities of the DOE, and a program to increase the functional preservation of electric grid operations or natural gas and oil operations in the face of threats and hazards. This section authorizes \$250 million for the period of FY 2022–2026 for the Cybersecurity for the Energy Sector RD&D program, \$50 million for the period of FY 2022–2026 for the Energy Sector Operational Support for Cyberresilience Program, and \$50 million for the period of FY 2022–2026 for Modeling and Assessing Energy Infrastructure Risk.

Cybersecurity plan

Allows the Secretary of Energy to require that award recipients, funded under this Act, submit a cybersecurity plan that demonstrates the entity's cybersecurity maturity in the context of the project.

Savings provision

Establishes that nothing in the subtitle affects the authority of any other federal department or agency.

Supply chains for clean-energy technologies

Battery processing and manufacturing

This section establishes a “Battery Material Processing Grant Program” within DOE’s Office of Fossil Energy to ensure the US has a viable battery materials processing industry. This section also establishes within the Office of Energy Efficiency and Renewable Energy a battery manufacturing and recycling grant program to support and sustain a North American battery supply chain. This section also directs the Secretary to continue the Lithium-Ion Battery Recycling Prize and convene a task force on battery producer requirements. This section also establishes several programs within the DOE that would provide grants for battery recycling research, development and demonstration, states and units of local government to assist in the establishment or enhancement of state battery collection, recycling, and reprocessing programs and retailers that sell batteries for the implementation or establishment of a system to collect used batteries. This section authorizes \$3 billion for FY 2022–2026 for battery material processing grants, \$3 billion for FY 2022–2026 for battery manufacturing and recycling grants and \$10 million for FY 2022 for the recycling prize and \$125 million for the battery recycling programs at the DOE.

Electric drive vehicle battery recycling and second-life applications program

This section would expand an existing program at the DOE for research, development, and demonstration of EV battery recycling and second-life applications for vehicle batteries. This section authorizes \$200 million for FY 2022–2026.

Advanced energy manufacturing and recycling grant program

This section establishes a grant program focused on small- and medium-sized manufacturers to enable them to build new or retrofit existing manufacturing and industrial facilities to produce or recycle advanced energy products in communities where coal mines or coal power plants have closed. This section authorizes \$750 million for the period of FY 2022–2026.

Critical minerals mining and recycling research

This section establishes several initiatives to address supply chains resiliency. It establishes a critical mineral mining, recycling, and reclamation R&D grant program within the DOE; establishes a Critical Minerals Subcommittee of the National Science and Technology Council to coordinate science and technology efforts on critical minerals including recycling and substitute materials; and establishes a DOE grant program for pilot projects that process,

recycle, or develop critical minerals. This section authorizes \$100 million for the pilot project grant program for each of FY 2021–2024.

21st Century Energy Workforce Advisory Board

This section establishes an advisory board to support and develop a skilled energy workforce. The board would consist of between 10 and 15 members, at least one of whom represents a labor organization.

Fuels and technology infrastructure investments: Carbon capture, utilization, and storage, and transportation infrastructure findings

Carbon utilization program

This section establishes a grant program for state and local governments to procure and use products derived from captured carbon oxides. It expands the DOE's carbon utilization program objectives to include the development of standards and certifications to support commercialization of carbon oxide products. This section authorizes \$41,000,000 for FY 2022, \$65,250,000 for FY 2023, \$66,562,500 for FY 2024, \$67,940,625 for FY 2025, and \$69,387,656 for FY 2026.

Carbon Capture Technology Program

This section expands the DOE's Carbon Capture Technology program to include front-end engineering and design (FEED) for carbon dioxide transport infrastructure necessary to deploy CCUS technologies. This section authorizes \$100 million for FY 2022–2026.

Carbon dioxide transportation infrastructure finance and innovation

This section establishes a CO₂ Infrastructure Finance and Innovation Act (CIFIA) program, which will provide flexible, low-interest loans for CO₂ transport infrastructure projects and grants for initial excess capacity on new infrastructure to facilitate future growth. CIFIA will help facilitate private sector investment in CO₂ infrastructure. This section authorizes \$600 million for FY 2022 and FY 2023 and \$300 million for each of FY 2024–2026.

Carbon storage validation and testing

This section expands the DOE's Carbon Storage Validation and Testing program to include large-scale commercialization of new or expanded carbon sequestration projects and associated carbon dioxide transport infrastructure. This section authorizes \$2,500,000,000 for FY 2022–2026 for the program.

Secure geologic storage permitting

This section provides funding for the permitting of wells for the geologic sequestration of carbon dioxide and creates a grant program for states to establish their own Class VI permitting programs to ensure rigorous and efficient CO₂ geologic storage site permitting. This section authorizes \$75 million for the period of FY 2022–2026.

Geologic carbon sequestration on the Outer Continental Shelf

This section allows the Department of the Interior to permit geologic carbon sequestration on the Outer Continental Shelf.

Carbon removal

This section authorizes a program for projects that contribute to the development of four regional direct air capture hubs. This section authorizes \$3,500,000,000 for FY 2022–2026 for direct air capture projects to establish the four regional hubs.

Fuels and technology infrastructure investments: Hydrogen research and development

Additional clean hydrogen programs

This section establishes clean hydrogen programs at DOE, including:

- At least four regional clean hydrogen hubs to demonstrate the production, processing, delivery, storage, and end-use of clean hydrogen. This section authorizes \$8 billion for the period of FY 2022–2026.
- The development of a national strategy and roadmap to facilitate a clean hydrogen economy.
- A clean hydrogen manufacturing and recycling program to support a clean hydrogen domestic supply chain. For this program, the section authorizes \$500 million for the period of FY 2022–2026.
- A demonstration, commercialization and deployment program intended to decrease the cost of clean hydrogen production from electrolyzers. For this program, the section authorizes \$1 billion for the period of FY 2022–2026.
- The efficient execution of the DOE’s clean hydrogen program by instructing the National Energy Technology Laboratory, the National Renewable Energy Laboratory, and Idaho National to work in a crosscutting manner to carry out the new regional clean hydrogen hubs and clean hydrogen manufacturing and recycling programs.

Clean Hydrogen Production Qualifications

This section directs the Secretary, in consultation with the EPA Administrator and outside stakeholders, to develop an initial standard for the carbon intensity of clean hydrogen production from renewable, fossil fuel with CCUS, nuclear, and other fuel sources, beginning at 2 kilograms carbon dioxide per kilogram hydrogen (kg-CO₂/kg-H₂), adjusted after five years, and accounting for technological and economic feasibility to be applied to the activities in this title.

Fuels and technology infrastructure investments: Nuclear energy infrastructure

Infrastructure planning for micro and small modular nuclear reactors

This section requires the DOE to develop a report on the feasibility for using nuclear energy to meet resilience and carbon-reduction goals for the Department.

Property interests relating to certain projects and protection of information relating to certain agreements

This section allows the DOE to transfer fee title or property interest acquired by the Secretary in relation to any project funded under the Advanced Reactor Demonstration Program and extends

the confidentiality of intellectual property associated with the Advanced Demonstration Program from 5 years to 30 years.

Civil nuclear credit program

This section provides the DOE with the authority, in consultation with the heads of applicable Federal agencies, to establish a process to evaluate bids through an auction process and select certified nuclear reactors to be allocated credits. This section authorizes \$6 billion for the period of FY 2022–2026.

Fuels and technology infrastructure investments: Hydropower

Hydroelectric production incentives

This section authorizes \$125 million for FY 2022 for hydroelectric production incentives until expended.

Hydroelectric efficiency improvement incentives

This section authorizes \$75 million for FY 2022 for hydroelectric efficiency improvement incentives until expended.

Maintaining and enhancing hydroelectricity incentives

This section directs the Secretary of Energy to make incentive payments to the owners and operators of hydroelectric facilities for capital improvements related to maintaining and enhancing hydroelectricity generation by improving grid resiliency, improving dam safety, and environmental improvements. This section authorizes \$553,600,000 for FY 2022 until expended.

Pumped storage hydropower wind and solar integration and system reliability initiative

This section directs the Secretary to establish a demonstration project for a pumped storage hydropower project to facilitate the long-duration storage of intermittent renewable electricity. This section authorizes \$10 million for the period of FY 2022–2026.

Authority for pumped storage hydropower development using multiple Bureau of Reclamation reservoirs

This section creates a streamlined process under the Bureau of Reclamation for pumped storage hydropower development projects and clarifies that certain pumped storage projects using multiple Bureau of Reclamation reservoirs shall proceed through Bureau of Reclamation's permitting process, not through both the FERC and Bureau of Reclamation processes.

Limitations on issuance of certain leases of power privilege

This section provides requirements for the Secretary of the Interior concerning the issuance of a lease of power privilege for a proposed pumped storage project in Washington State.

Fuels and technology infrastructure investments: Miscellaneous

[Solar energy technologies on current and former mine land](#)

This section requires the DOE to create a report of the viability of siting solar energy on current and former mine land, including necessary interconnection, transmission siting, and the impact on local job creation.

[Clean energy demonstration program on current and former mine land](#)

This section establishes a program to demonstrate the technical and economic viability of carrying out clean-energy projects on current and former mine land in a compatible manner with any existing operations. This section authorizes \$500 million for the period of FY 2022–2026.

[Leases, easements, and rights-of-way for energy and related purposes on the Outer Continental Shelf](#)

This section amends the Outer Continental Shelf Lands Act to permit offshore energy storage. This will provide flexibility for the incorporation of energy storage technologies into future offshore energy development, such as battery storage for offshore wind.

Enabling Energy Infrastructure Investment and Data Collection

[Department of Energy Loan Program](#)

This section clarifies the reasonable prospect of repayment criteria for both the Title XVII Innovative Energy Loan Guarantee (Title XVII) Program and the Advanced Technology Vehicle Manufacturing (ATVM) Program. It also expands the eligibility of the Title XVII Program to include projects that increase the domestic supply of critical minerals and makes certain state energy financing entities eligible to apply for Title XVII loans. The section expands the eligibility of the ATVM program to include medium and heavy-duty vehicles, trains, aircraft, maritime vessels, and hyperloop technology. This section also provides loan guarantees for certain Alaska natural gas transportation projects and systems.

[Data collection in the electricity sector](#)

This section directs the EIA to create a dashboard relating to the operation of the bulk power system including hourly operating data, and a system to provide data on the operations of load-serving entities.

[Expansion of energy consumption surveys](#)

This section directs the EIA to expand the Manufacturing Energy Consumption Survey, the Commercial Building Energy Consumption Survey, and the Residential Energy Consumption Survey to obtain more comprehensive data and reduce the burden on survey respondents; report community-level economic and environmental impacts of energy supply; and improve the presentation and distribution of data.

[Data collection on electric vehicle integration with the electricity grids.](#)

This section directs the EIA to expand data collection with respect to electric vehicle integration with the electricity grid.

Plan for the modeling and forecasting of demand for minerals used in the energy sector

This section directs the EIA to develop a plan in collaboration with US Geological Survey for the forecasting of demand for energy equipment, including equipment for energy production or storage purposes that uses minerals, such as lithium and cobalt, which are or potentially may be determined to be critical minerals.

Expansion of international energy data

This section directs the EIA to implement measures to expand and improve its international energy-data resources to understand the production and use of energy in various countries, changing patterns of energy use internationally, the relative costs and environmental impacts of energy production and use internationally, and plans for or construction of major energy facilities or infrastructure.

Plan for the National Energy Modeling System

This section directs the EIA to develop a plan to update or further the capabilities of the National Energy Modeling System, including with respect to technologies identified for large-scale demonstration projects, such as carbon capture and hydrogen production.

Report on costs of carbon abatement in the electricity sector

This section directs the EIA to submit a report on the potential use of levelized cost of carbon abatement as a metric to compare system-level costs of technology options to reduce emissions, and a potential process to measure carbon dioxide emissions intensity per unit of output production.

Harmonization of efforts and data

This section directs the EIA to establish a system to harmonize data collection efforts with the EPA and other relevant federal agencies.

Consideration of measures to promote greater electrification of the transportation sector.

This section directs states to consider measures to promote greater electrification of the transportation sector including the establishment of rates that promote affordable and equitable electric vehicle charging options, improve the customer experience associated with EV charging including reducing wait times, accelerate third-party investment in public EV charging, and appropriately recover the marginal costs of delivering electricity to electric vehicles and electric vehicle charging infrastructure.

Digital climate solutions report

This section requires the Secretary to report on the use of digital tools and platforms, such as artificial intelligence, crowdsourcing, and other technologies, such as climate solutions.

Study on impact of electric vehicles

This section requires the Secretary of Energy to conduct a study on the cradle-to-grave environmental impact of electric vehicles.

Study on impact of forced labor in China on the electric vehicle supply chain

This section requires the Secretary of Energy, in coordination with the Secretary of State, to study the impact of forced labor in China on the electric vehicle supply chain.

Energy efficiency and building infrastructure: Residential and commercial energy efficiency

Energy efficiency revolving loan fund capitalization grant program

This section creates a revolving loan fund capitalization grant program within the State Energy Program for recipients to conduct commercial energy audits, residential energy audits, or energy upgrades or retrofits. This section authorizes \$250 million for FY 2022.

Energy auditor training grant program

This section establishes a competitive grant program under which the Secretary shall award grants to eligible states to train individuals to conduct energy audits or surveys of commercial and residential buildings. This section authorizes \$40 million for the period of FY 2022–2026.

Energy efficiency and building infrastructure: Buildings

Cost-effective codes implementation for efficiency and resilience

This section creates a grant program within the Building Technologies Office to enable sustained, cost-effective implementation of updated building energy codes. This section authorizes \$225 million for the period of FY 2022–2026.

Building, training, and assessment centers

This section provides grants to institutions of higher education to establish building training and assessment centers to educate and train building technicians and engineers on implementing modern building technologies. This section authorizes \$10 million for FY 2022.

Career skills training

This section directs the Secretary to award grants to pay the Federal share of associated career skills training programs under which students concurrently receive classroom instruction and on-the-job training for the purpose of obtaining an industry-related certification to install energy efficient buildings technologies. This section authorizes \$10 million for FY 2022.

Commercial building energy consumption information sharing

This section requires the EIA and the EPA to agree to an information-sharing agreement related to commercial building energy consumption data.

Energy efficiency and building infrastructure: Industrial energy efficiency

Future of industry program and industrial research and assessment centers

This section provides funding for institutions of higher education-based industrial research and assessment centers to identify opportunities for optimizing energy efficiency and environmental performance at manufacturing and other industrial facilities. This section also establishes a grant program to fund upgrades for small- and medium-sized manufacturers that have been

recommended in an assessment from an IAC or CHP TAP. This section authorizes \$550 million for the period of FY 2022–2026.

Sustainable manufacturing initiatives

This section directs the Office of Energy Efficiency and Renewable Energy to provide technical assessments for manufacturers to maximize energy efficiency, prevent pollution, improve efficient use of water, conserve natural resources, and pursue other goals determined by the Secretary.

Energy efficiency and building infrastructure: Schools and nonprofits

Grants for energy efficiency improvements and renewable energy improvements at public school facilities

This section directs the Secretary to award competitive grants to make energy efficiency, renewable energy, and alternative-fuel vehicle upgrades and improvements at public schools. This section authorizes \$500 million for the period of FY 2022–2026.

Energy efficiency materials pilot program

This section establishes a pilot program to award grants to provide nonprofit buildings with energy efficiency materials. This section authorizes \$50 million for the period of FY 2022–2026.

Energy efficiency and building infrastructure: Miscellaneous

Weatherization assistance program

This section authorizes \$3,500,000,000 for FY 2022 for the Weatherization Assistance Program.

Energy efficiency and Conservation Block Grant Program

This section authorizes \$550 million for FY 2022 for the Energy Efficiency and Conservation Block Grant Program (EECBG). This section also amends the Energy Independence and Security Act of 2007 to allow EECBG funding to be used in programs that finance energy efficiency and other clean-energy capital investments, projects, loan programs, and performance contracting programs.

Survey, analysis, and report on employment and demographics in the energy, energy efficiency, and motor vehicle sectors of the United States

This section establishes an “Energy Jobs Council” to conduct a survey of employers in the energy, energy efficiency, and motor-vehicle sectors and perform analysis of the figures and demographics in those sectors to be made publicly available. This section is simply codifying the United States Energy and Employment Report that the DOE used to produce (and has been produced by the Energy Futures Initiative since 2017).

Assisting Federal Facilities with Energy Conservation Technologies grant program

This section authorizes \$250 million for FY 2022 for the existing AFFECT grants that are distributed through the Federal Energy Management Program to provide grants to federal agencies that they can leverage with private capital to make energy and water efficiency upgrades to federal buildings.

Rebates

This section authorizes \$20 million for the period of FY 2022–2023 for the extended product system rebate program and the energy efficient transformer rebate program.

Model guidance for combined heat and power systems and waste heat to power systems

This section requires the Secretary of Energy and FERC to review existing rules and procedures relating to interconnection service and additional services throughout the US for electric generation with nameplate capacity up to 150 megawatts connecting at either distribution or transmission voltage levels to identify barriers to the deployment of combined heat and power systems and waste heat to power systems.

Methane reduction infrastructure

Orphaned well site plugging, remediation, and restoration

This section authorizes \$4,707,000,000 for programs to plug, remediate, and reclaim orphaned wells on Federal, State, and Tribal lands

Addressing Legacy Pollution (\$21 billion)

Funds to clean up brownfield and superfund sites, reclaim abandoned mine lands, and plug orphan oil and gas wells, improving public health and creating good-paying jobs.

Western Water Infrastructure (\$8.3 billion)

Funds for Bureau of Reclamation western water infrastructure, including for aging infrastructure, water storage, water recycling and reuse, WaterSMART, and drought contingency plans, among other things. Includes \$400 million for WaterSMART Water and Energy Efficiency Grants (includes \$100 million for natural infrastructure projects).

Authorization of Appropriations for Energy Act of 2020

Energy storage demonstration projects

This section authorizes funding for the Energy Storage Demonstration Projects and Pilot Grant Program authorized by the Energy Act of 2020. This section authorizes \$355 million for FY 2022–2025 for that program. This section also authorizes \$150 million for FY 2022–2025 for a Long-duration Demonstration Initiative and Joint Program.

Advanced reactor demonstration program

This section authorizes \$3,211,000,000 for the Advanced Reactor Demonstration Program authorized in the Energy Act of 2020 for FY 2022–2027.

Mineral security projects

This section authorizes \$825,668,000 in funding for FY 2022–2026 for the National Geological and Geophysical Data Preservation Program, Rare Earth Mineral Security, Critical Material Innovation, Efficiency, and Alternatives, and a Critical Mineral Supply Chain Research Facility authorized by the Energy Act of 2020.

Carbon capture demonstration and pilot programs

This section authorizes \$3,474,000,000 for FY 2022–2025 for Carbon Capture Large-Scale Pilot Projects and Carbon Capture Demonstration Projects authorized by the Energy Act of 2020.

Direct air capture technologies prize competitions

This section authorizes \$115 million for FY 2022–2025 for the Direct Air Capture Technologies Prize Competition authorized by the Energy Act of 2020.

Water power projects

This section authorizes \$146,400,000 for FY 2022–2025 for hydropower and marine energy and National Marine Energy Centers authorized by the Energy Act of 2020.

Renewable energy projects

This section authorizes funding for the period of FY 2022–2025 for renewable energy demonstration projects including \$84 million for enhanced geothermal systems, \$100 million for wind energy, and \$80 million for solar energy authorized by the Energy Act of 2020. It includes a provision making it clear that the authorization for wind energy is part of the Energy Act authorization.

Industrial emissions demonstration projects

This section authorizes \$500 million for FY 2022–2025 for industrial emissions demonstration projects authorized by the Energy Act of 2020.

Other authorizations

Ports and waterways (\$16.6 billion)

Funding for waterway and coastal infrastructure, inland waterway improvements, port infrastructure, and land ports of entry through the US Army Corps of Engineers, Department of Transportation, Coast Guard, General Services Administration, and Department of Homeland Security.

Reduction in truck emissions at ports (\$80 million per year for 5 years)

This program requires the Secretary of Transportation to coordinate and fund projects through competitive grants that reduce port-related emissions from idling trucks. This program comes from the recent EPW Surface Transportation Reauthorization that passed committee unanimously, and is included in the bill in section 1402. Additionally, this section requires a study on how ports would benefit from electrification and emerging technologies that reduces truck emissions.

Ports/Waterways

Funding Table:

PORTS-WATERWAYS	
\$5,150,000,000	Army Corps of Engineers Construction
\$4,000,000,000	Army Corps of Engineers Operations and Maintenance
\$300,000,000	Army Corps of Engineers Mississippi River and Tributary
\$100,000,000	Army Corps of Engineers General Expenses/Regulatory Needs
\$2,250,000,000	DOT Port Infrastructure Development Program
\$25,000,000	DOT Marine Highways Program
\$429,000,000	U.S. Coast Guard Unfunded Priority Infrastructure
\$3,850,000,000	GSA/CBP Land Ports of Entry Modernization and Construction
\$400,000,000	Reduction in Truck Emissions at Ports
\$912,000,000	Ferry Boat and Terminal Construction

Source: [Bipartisan Infrastructure Investment and Jobs Act Summary](#) (PDF), Senator Maria Cantwell (2021)

\$500 million over 5 years for the Low-Income Housing Energy Assistance Program (LIHEAP)

This funding will provide low-income families assistance with rising energy prices due to extreme weather.

Water infrastructure (\$55 billion)

Includes \$23.4 billion for the bipartisan Drinking Water and Wastewater Infrastructure Act of 2021. Provides a historic \$15 billion for lead service line replacement and \$10 billion to address Per- and Polyfluoroalkyl Substances (PFAS). Supports water infrastructure in Tribal communities by providing \$3.5 billion (\$1.8 billion under Water Infrastructure and \$1.7 billion under Resiliency) for the Indian Health Service Sanitation Facilities Construction program, in addition to providing funding to complete all currently authorized Indian Water Rights Settlements.

Airports (\$25 billion)

Increases funds for the Airport Improvement grant program for runways, gates, & taxiways as well as a new Airport Terminal Improvement program for terminals, concessions, and multimodal connections. Improves air traffic control infrastructure.

Broadband (\$65 billion)

Grants to states for broadband deployment, makes broadband access more affordable for low-income families, expands eligible private activity bond projects to include broadband infrastructure, and supports middle-mile deployment efforts.