

**McKinley-Schrader**  
**The Clean Energy Future through Innovation Act of 2021**  
**Section-by-Section**

**Title 1 – Carbon Capture, Utilization, and Storage**

***Subtitle A – Research, Development, and Demonstration for CCUS Technologies***

**Section 101 – Fossil Energy Objectives:**

- Amends section 961 of the Energy Policy Act of 2005 to add a new objective on carbon dioxide emissions.
- Authorizes \$2.2 billion per year, through fiscal year (FY) 2031, for research, development, demonstration (RD&D), and commercial application programs at the U.S. Department of Energy (DOE).

**Section 102 – Carbon Capture Technologies for Power Systems:** Amends section 962 of the Energy Policy Act of 2005, regarding DOE’s RD&D and commercial application program for carbon capture technologies for power systems, to:

- Extend the authorization of appropriations for the program through FY31;
- Specify that the purpose of carbon capture test centers includes testing technologies that are beyond laboratory testing but not yet ready for testing at commercial scale;
- Specify that criteria for selecting test centers include the ability to test for the integration of carbon capture technology with utility-scale power plants, and the involvement of market participants; and
- Specify a minimum cost-share of 20% for carbon capture test centers.

**Section 103 – Carbon Storage Validation and Testing:** Amends section 963 of the Energy Policy Act of 2005 to:

- Specify that DOE shall expand federal data collection and analysis on carbon dioxide storage, working with the U.S. Geologic Survey and other federal agencies; and
- Extend the authorization of appropriations for the carbon storage validation program through FY31.

**Section 104 – Carbon Utilization:** Extends the authorization of appropriations for the DOE carbon utilization RD&D program at \$75 million per year through FY31.

**Section 105 – Advanced Energy Systems:** Creates a new DOE program for advanced energy systems, including high efficiency turbines, supercritical CO<sub>2</sub>, oxy-combustion systems, chemical looping, hydrogen and ammonia power generation. Authorizes appropriations for the program at \$1.275 billion per year through FY31.

***Subtitle B – Deployment of CCUS with Commercial-Scale Electricity Generation Facilities***

**Section 111 – Deployment of CCUS with Commercial-Scale Electricity Generation Facilities:**

- Authorizes DOE to support commercial-scale deployment of CCUS through contracts for differences.
- Caps DOE support at 11 gigawatts (GW) of CCUS capacity and \$10 billion total.

***Subtitle C – Federal Support for Commercial Deployment of CCUS***

**Section 121 – Enhancement of Carbon Dioxide Sequestration Credit:** Amends section 45Q of the Internal Revenue Code to:

- Extend the tax credit for CO<sub>2</sub> storage from 12 to 20 years;

- Extend the “commence construction” date by 10 years, from January 1, 2026 to January 1, 2036;
- Increase the credit for geologic storage to \$85 per metric ton; and
- Increase the credit for the use of CO<sub>2</sub> in qualified enhanced oil or gas recovery (EOR) to \$70 per metric ton.

Section 122 – Reform of Loan Guarantee Program: Allows projects to receive DOE loan guarantees even if they receive a tax credit, or other financial assistance, for clean coal technology. Directs DOE to reduce the cost of loan guarantees, particularly for first-of-a-kind projects.

Section 123 – Private Activity Bonds for Carbon Dioxide Capture Facilities: Extends the eligibility for private activity bonds to “qualified carbon dioxide capture facilities” that capture at least 65% of CO<sub>2</sub>.

Section 124 – Extension of Publicly-Traded Partnership Ownership Structure: Extends the tax benefits of the publicly traded ownership structure to partnerships focused on CCUS.

Section 125 – Production Tax Credit for Certain Electricity Generation Using CCUS: Establishes a production tax credit (PTC) for CCUS projects that may be claimed as an alternative to 45Q, which is intended to incentivize CCUS projects for gas-fired generators.

- The formula:
  - For fossil fuel generators using CCUS, \$30 per megawatt hour (MWh) produced for saline storage or \$24 per MWh for EOR projects, multiplied by a discount factor; and
  - For generators using qualified hydrogen or ammonia, \$100 per MWh.
- The discount factor:
  - 90 pounds divided by annual CO<sub>2</sub> emissions rate (pounds/MWh) for the generator;
  - If the rate is less than 90 pounds the discount factor is 1; and
  - If the rate is greater than 180 pounds, the discount factor is 0.

Section 126 – Elective Payment of Credit: Allows taxpayers without sufficient tax liability, state or local government or tribal entities, or electric cooperatives, to elect to receive the 45Q tax credit or the CCUS PTC, as established in section 135, as a direct payment.

Section 127 – Allowance Against Base Erosion Minimum Tax: Provides that the incentive created by the section 45Q tax credit will not be reduced by the base erosion minimum tax calculation.

Section 128 – Modification of Merchant Banking Investment Regulation: Modifies banking law limitations that could otherwise constrain the ability of merchant banks to receive the full tax benefits under section 45Q for investments in qualified CCUS projects.

### ***Subtitle D – Support for Carbon Dioxide Transportation and Sequestration Infrastructure***

Section 131 – Facilities for Carbon Dioxide Transportation and Sequestration: Directs DOE to:

- Establish a program that:
  - Identifies geological sequestration resources to accept at least 250 million tons of CO<sub>2</sub> with costs of less than \$10 per ton;
  - Provides financial assistance to support securing storage rights for those reservoirs and obtaining permits and approvals to enable CO<sub>2</sub> storage in those reservoirs.

- Provide grants to support the development of pipeline infrastructure to transport CO<sub>2</sub> to sequestration facilities and support long-term storage.

Authorizes \$2 billion per year, through FY31, to support these grants.

Section 132 – Geologic Sequestration Utilities: Directs DOE, in collaboration with the U.S. Department of Transportation (DOT) and the U.S. Environmental Protection Agency (EPA) to:

- Provide technical assistance to states to foster the formation of CO<sub>2</sub> sequestration utilities by governmental and non-governmental entities; and
- Report to Congress on the regulatory requirements that apply to CO<sub>2</sub> pipelines and sequestration, and recommend changes to laws, regulations, or practices to support the development of CO<sub>2</sub> sequestration.

## **Title 2 – Renewable Energy, Energy Efficiency, and Storage**

Section 201 – Establishment of Technology Performance and Cost Targets: Directs DOE to establish technology and performance cost targets for 15-year innovation and commercialization programs for:

- Renewable energy (including wind, solar, hydropower, geothermal, biomass, renewable hydrogen, and advanced renewable manufacturing);
- Energy storage technologies (mechanical, chemical, and thermal), including microgrids;
- Transmission technologies, including high-voltage direct current (HDVC);
- Commercial, industrial, and residential building efficiency;
- Energy efficiency for heavy industries; and
- Industrial process technologies, including heat pumps and induction stoves.

Section 202 – Advanced Innovation and Commercialization Program: Directs DOE, the National Labs, and other agencies, and private and academic partners, to carry out RD&D programs designed to achieve the cost and performance targets established under section 201. Also:

- Authorizes appropriations for those projects outlined in section 201, including:
  - \$20 billion for renewables;
  - \$4 billion for storage;
  - \$6 billion for transmission;
  - \$10 billion for energy efficiency technologies; and
  - \$10 billion for building electrification.
- Directs DOE to establish grant programs to support the early deployment of advanced technologies referenced in section 201, with \$30 billion authorized through FY31; and
- Directs DOE and other agencies to establish federal procurement goals and deadlines for section 201 technologies.

Section 203 – Updating Manufactured Homes: Provides grants and technical assistance to facilitate the replacement of older manufactured homes with energy efficiency modular homes. Authorizes \$2.5 billion per year, through FY31, in appropriations.

Section 204 – Investment Tax Credits for Energy Battery Storage, Offshore Wind, and Certain Hydropower Technologies: Allows offshore wind, energy storage, hydropower energy projects at non-generating dams, enhanced geothermal, and direct air capture projects to be eligible for an investment tax credit (ITC).

Section 205 – Extension of Production Tax Credit for Solar and On-shore Wind: Extends the solar and wind PTC to January 1, 2031.

Section 206 – Renewal of Qualifying Advanced Energy Project Credit: Renews the section 48c Advanced Energy Manufacturing Tax Credit, eliminating the 2-year limit on its effective date.

Section 207 – Performance-Based Energy Efficiency Tax Credits for Commercial and Residential Buildings: Creates a tax credit for deep retrofits and the construction of zero-energy commercial and residential buildings. This includes:

- Deep retrofits that use energy efficiency to reduce a building’s energy consumption by 50% or more;
- Zero-energy-ready buildings that meet specific criteria for high efficiency and preparation to add a solar energy system later;
- Zero-energy buildings that generate renewable energy on-site that is equivalent to their demand;
- A tax credit for zero-energy-ready-buildings:
  - Residential (under 5 units): \$5,000 per unit;
  - Residential (5 units and above): \$3,500 per unit; and
  - Commercial: \$3 per square foot.
- An additional tax credit, using the same amounts listed above, if the building is certified to be zero-energy over a 12-month period;
- A tax credit for deep-energy retrofits:
  - Residential: \$10,000 per unit, with a maximum of \$1 million total per building; and
  - Commercial: \$25 per square foot, with a maximum of \$2 million total per building.
- The tax credit sunsets when specific market milestones are reached.

Section 208 – Extension of Publicly Traded Partnership Ownership Structure to Renewable Energy Projects: Allows investors in renewable energy projects to gain access to the tax advantages of a master limited partnership (MLP), a tax status currently available only to investors in oil and gas projects.

Section 209 – Manufacturer Credit for High-Efficiency Heat Pumps and Heat Pump Water Heaters: Establishes a new tax credit for U.S. manufacturers of high-efficiency heat pumps and heat pump water heaters that:

- Includes residential and commercial heat pump water heaters, space heating heat pumps, industrial heat pumps; electric and gas heat pumps;
- Specifies efficiency metrics and qualifying efficiency levels;
- Includes incentives of:
  - \$600 per unit for commercial heat pump water heaters;
  - \$800 per units for residential space heating heat pumps;
  - \$18-\$36 per 1,000 Btus of heating capacity for commercial and industrial heat pumps.
- Expires in 2030
- Is based upon the 45M tax credit for appliances, enacted by Congress in 2005; and
- Allows overseas production for the first 2 years in order to permit the reshoring of production facilities.

Section 210 – Other Authorizations of Appropriations: Authorizes appropriations through FY31 for:

- ARPA-E: \$569 million in FY22; \$713 million in FY23; \$856 million in FY24; \$1 billion annually in FYs 25-31;
- Regional Innovation: \$100 million in FY22; \$200 million in FY23; \$300 million in FY24; and \$500 million annually in FYs 25-31;

- Grid Modernization: \$238 million in FY22; \$375 million in FY23; \$513 million in FY24; and \$650 million annually in FYs 25-31;
- Advanced Wind: \$178 million in FY22; \$252 million in FY23; \$326 million in FY24; and \$400 million annually in FYs 25-31;
- Advanced Solar: \$360 million in FY22; \$440 million in FY23; \$520 million in FY24; and \$600 million annually in FYs 25-31;
- Storage: \$150 million per year in FY22 through FY31;
- Buildings: \$381 million in FY22; \$478 million in FY23; \$574 million in FY24; and \$670 million annually in FYs 25-31;
- Industrial Applications: \$381 million in FY22; \$478 million in FY23; \$574 million in FY24; and \$840 million annually in FYs 25-31; and
- Enhanced Geothermal: \$100 million over FY19 levels (\$30 million in R&D and \$70 million in demonstration) per year in FY22 through FY31.

### **Title 3 – Existing and Advanced Nuclear Power**

**Section 301 – Zero-Emissions Credit Program:** Creates a DOE program to provide zero-emission credits (ZECs) to existing nuclear plants, beginning 2 years after enactment. Specifically:

- ZECs are set at \$13.25 per MWh, with an annual adjustment for inflation;
- DOE may reduce the value of the ZECs if they are not needed;
- Revenue from clean energy credits (CECs) authorized in Title 4 is subtracted from the value of ZECs issued to a plant; and
- The ZEC program terminates 5 years after the first effective compliance date of the CES.

**Section 302 – Investment Tax Credit for Nuclear Energy Property:**

- Extends the ITC to qualified nuclear energy properties.
- Allows the assignment of the ITC from qualified public entities without tax liability to an entity that can use the tax credit.
- Makes nuclear power put into service before January 1, 2025 eligible for the tax credit that:
  - Starts at 30%;
  - Phases down to 26% in 2024; 22% in 2025; and
  - Phases out on January 1, 2026.

**Section 303 – Expanding Federal Clean Electricity Purchasing Requirements:**

- Increases the amount of clean electricity the federal government must purchase from 7.5% renewable energy to 35% clean electricity beginning in 2021.
- Allows nuclear and fossil energy with CCUS to qualify as clean electricity.
- Allows DOE to enter into long-term power purchase agreements for nuclear power when needed for national security or mission-critical activities.

**Section 304 – Modernizing the Nuclear Regulatory Commission:**

Directs the Nuclear Regulatory Commission (NRC) to:

- Endeavor to reduce the administrative burden of licensing advanced reactors, and report to Congress on ways to improve NRC processes, procedures, and regulations, including reforms that would enable the NRC to complete review of a new design within 2 years;

- Report on the feasibility and implications of repealing restrictions on issuing a license to entities under foreign ownership or control;
- Report on the impact of elimination of mandatory hearings for uncontested license applications;
- Allow the use of informal hearing procedures, unless the NRC decides formal procedures are necessary;
- Make hearings on licenses for uranium enrichment facilities optional unless requested by a person with an interest; and
- Streamline the license application review process (within a 2-year timeframe).

Authorizes \$20 million per year for FY22 through FY31 for these activities.

**Section 305 – Demonstration and Early Deployment of Advanced Nuclear Reactors:**

Directs the Secretary of Energy to:

- Enter into agreements by the end of 2025 to carry out no fewer than five advanced nuclear reactor demonstration projects; and
- Establish and annually update goals for research to support the demonstration and deployment of such reactors.

Authorizes \$1.5 billion annually for FYs 2022 and 2023 for five advanced nuclear reactor programs.

**Section 306 – Authorization of Appropriations for Loan Guarantees for Advanced Nuclear Facilities:** Expands and extends the DOE loan guarantee program for advanced nuclear projects. Authorizes \$10 billion in loans per year for FY22 through FY31.

**Section 307 – Expanding the Production Tax Credit for Advanced Nuclear Power:** Expands the PTC for advanced nuclear power (Section 45J) by:

- Increasing the credit per kilowatt hour from 1.8 cents/kWh to 2.7 cents/kWh; and
- The maximum amount of generation eligible for the credit from 6,000 MW to 15,000 MW.

**Title 4 – Federal Clean Electricity Standard**

**Section 401 – Certification of Cost-Effective Market Penetration of Clean Electricity Technologies:** Establishes a federal Decarbonization and Innovation Assessment Program 2 years after enactment to monitor progress on emissions and technology innovation. Defines “cost-effective market penetration” as when the following conditions are met, no sooner than 5 years after enactment:

- 3 GW of new zero-emissions capacity becomes commercially operational, if:
  - 1 GW is from coal with CCUS;
  - Capacity that is over 50% federally funded does not count; and
- If the cost of new, firm clean generation is determined to be no more than 10% higher than existing generation.

DOE is directed to certify when the criteria for market penetration are met.

**Section 402 – Federal Clean Electricity Standard:** Establishes a federal clean electricity standard (CES) that:

- Requires utilities to purchase clean energy in increasing amounts over time to achieve an 80% reduction in CO<sub>2</sub> emissions by 2050;
- Sets the emissions baseline as the year of enactment;

- Sets the first compliance period as 10 years after enactment, or 2 years after the date when cost-effective market penetration (as established under section 401) is achieved;
- Requires DOE to project emissions requirements of the first compliance period 2 years after enactment to facilitate planning for utilities;
- Establishes alternative compliance payments (ACPs) of \$30 per MWh, rising 5% annually, adjusted for inflation;
- Allows CECs to be traded or banked for future use;
- Credits all generation with annual CO<sub>2</sub> intensity less than .82 metric tons per MWh;
- Exempts electricity suppliers that sold less than 20 MWh to consumers in the previous year;
- Directs DOE, in coordination with the Federal Energy Regulatory Commission (FERC), to consider dynamic crediting methodologies, which would base crediting on displaced CO<sub>2</sub>;
- Directs DOE to substitute a dynamic crediting methodology (or methodologies) for crediting purposes, if approved;
- Amends the Clean Air Act to provide that, for the first compliance period of the CES, a change to a power plant to reduce its CO<sub>2</sub> emissions will not trigger New Source Performance Standards requirements for the plant, provided that the change does not cause:
  - A violation of a National Ambient Air Quality Standard (NAAQS) affecting an environmental justice community; and
  - An increase in the maximum hourly rate of the plant's emissions of a regulated pollutant; and
  - Both a significant increase and a significant net increase in the plant's actual annual emissions of such a pollutant.
- Establishes civil penalties for noncompliance; and
- Does not preempt state and local governments;

Section 403 – Regional Clean Electricity Planning Models: Directs DOE to make available to states one or more methodologies for regional electricity planning that could facilitate compliance with the CES at least cost and consistent with reliability needs.

Section 404 – Stand-By Emissions Performance Standards: EPA may enforce GHG emission standards for power plants under Title 1 of the Clean Air Act if:

- Sectoral emissions rise by more than 6%; or
- Programs authorized under this Act are not fully funded; or
- The CES is not being promulgated or enforced.

DOE is required to consult with EPA annually to determine average sectoral greenhouse gas emissions.

## **Title 5 – Miscellaneous**

Section 501 – Additional Requirements: Requires projects funded by the Act pay prevailing wages and comply with labor standards, except for grants awarded under section 203 (manufactured homes).

Section 502 – Utilization of Qualified Apprentices by Construction Contractors: Requires 15% of labor from apprentices; establishes penalties for noncompliance and waivers when conditions do not permit compliance.

Section 503 – Requirements Applicable to Tax Incentive Programs: Taxpayers seeking a credit under sections 121, 125, 204, 205, 206, 207, 302, and 307 shall certify compliance with the labor standards established in this section, including requirements to pay prevailing wages and employ apprentices.