

McKinley-Schrader
CLEAN ENERGY FUTURE THROUGH INNOVATION ACT OF 2020
Section-by-Section

Section Number	Section Name	Description of Key Provisions
Section 101	Purposes	This section enumerates the purposes, all of which relate to driving development and deployment of low- and zero-carbon power technologies, and to build a competitive market for them.
Section 102	Short title; table of contents	
Section 103	Definitions	
Title 1	Carbon Capture, Utilization and Storage	Carbon Capture, Utilization and Storage
Subtitle A	Research, Development, and Demonstration for CCUS Technologies	
Section 111	Fossil Energy Objectives	Adds new objectives on carbon capture, utilization and storage to the Energy Policy Act of 2005.
Section 112	Carbon Capture Technologies for Power Systems	<p>Directs DOE to conduct a RD&D and commercial application program to support:</p> <ul style="list-style-type: none"> • CCUS for coal and natural gas, including large-scale CCUS pilot projects • Carbon capture pilot test centers • Commercial scale CCUS demonstration projects • R&D for direct air capture, hydrogen & ammonia with CCUS, and EE in power generation • Authorizes \$600 million per year for 5 years <p>GAO is directed to conduct a study of the program</p>
Section 113	Carbon Storage Validation and Testing	<p>Directs DOE to carry out a carbon storage RD&D program that:</p> <ul style="list-style-type: none"> • Focuses on a variety of geologic settings • Establishes regional carbon sequestration partnerships to carry out large-scale carbon sequestration demonstrations • Transitions the demonstrations into integrated commercial storage complexes • Collects data <p>Authorizes appropriations of \$250 million per year for 5 years.</p>

Section 114	Carbon utilization	<p>Directs DOE to:</p> <ul style="list-style-type: none"> • carry out a CO₂ utilization RD&D program that assesses and monitors potential changes in lifecycle CO₂ emissions and evaluates novel uses for CO₂; and • contract with the National Academies to conduct a study on carbon utilization; and <p>Authorizes expenditures of \$75 million per year for 5 years.</p>
Section 115	Advanced Energy Systems	<ul style="list-style-type: none"> • Creates a DOE program for advanced energy systems, including high efficiency turbines, supercritical CO₂, oxy-combustion systems, chemical looping, hydrogen and ammonia power generation, etc.; and • Authorizes appropriations to the program \$1.275 billion per year for 5 years
Subtitle B	Deployment of CCUS with commercial-scale electricity generation facilities	
Section 121	Deployment of CCUS with commercial-scale electricity generation facilities	<ul style="list-style-type: none"> • Allows DOE to support commercial scale deployment of CCUS through contracts for differences • Allows DOE to support up to 3 GW of CCUS capacity, or make up to a \$10 billion investment • Requires a DOE study to evaluate whether the investments were adequate to stimulate and support robust commercial deployment of CCUS; and • If the study finds more investment is needed, then DOE can support up to an additional 8 GW of CCUS
Subtitle C	Federal Support for Commercial Deployment of CCUS	
Section 131	Enhancement of Carbon Dioxide Sequestration Credit	<p>Amends section 45Q of the Internal Revenue Code to:</p> <ul style="list-style-type: none"> • extend the tax credit for CO₂ storage to 20 years (from 12 years) • extend the last year of project eligibility for the tax credit from 2024 to 2033
Section 132	Reform of Loan Guarantee Program	<ul style="list-style-type: none"> • Allows projects to receive DOE loan guarantees even if they receive a tax credit or other financial assistance for clean coal technology

		<ul style="list-style-type: none"> • Directs DOE to reduce the cost of loan guarantees, particularly for FOAK projects
Section 133	Private Activity Bonds for Carbon Dioxide Capture Facilities	<ul style="list-style-type: none"> • extends eligibility for private activity bonds to “qualified carbon dioxide capture facilities” that capture at least 65% of the CO₂; and • defines relevant terms
Section 134	Extension of Publicly Traded Partnership Ownership Structure	Extends the tax benefits of the publicly traded partnership ownership structure to CCUS-focused partnerships.
Section 135	Production tax credit for certain electricity generation using carbon capture utilization and storage	<p>Establishes a production tax credit for CCS projects (45U) that may be claimed as an alternative to 45Q. Intended to incentivize CCS projects for gas-powered generators that 45Q’s per-ton metric does not adequately reward. PTC formula:</p> <ul style="list-style-type: none"> • For fossil fuel generators using CCS, \$30 per mwh produced for saline storage, \$24 per mwh for EOR projects, multiplied by discount factor. • For generators using qualified hydrogen or ammonia, formula is \$100 per mwh. • Discount factor: 90 divided by annual CO₂ emissions rate (lbs/mwh), except: If rate <90 lbs, discount = 1; if rate >180 lbs, discount = 0
Section 136	Elective Payment of Credit	Allows taxpayers without sufficient tax liability, or government entities, to receive the federal incentive of the CO ₂ tax credits in this bill as a direct payment in lieu of a tax credit.
Subtitle D	Support for Carbon Dioxide Transportation and Sequestration Infrastructure	
Section 141	Securing Geologic Reservoirs for Carbon Dioxide	<p>Directs DOE to establish a program to:</p> <ul style="list-style-type: none"> • identify geological storage resources to accept at least 250 million tons of CO₂ with costs of less than \$10/ton; • secure storage rights for those reservoirs; and • obtain permits and approvals to enable CO₂ storage in those reservoirs.
Section 142	Financial Assistance for Carbon Dioxide Sequestration Infrastructure Development	Directs DOE to provide grants to support pipeline infrastructure to transport CO ₂ and sequestration facilities necessary to support long-term storage; authorizes annual appropriations of \$2 billion for 5 years (total \$10 billion) to support those grants.
Section 143	Geologic Sequestration Utilities	Directs DOE (collaborating with DOT & EPA) to:

		<ul style="list-style-type: none"> • provide technical assistance to states to foster formation of CO₂ sequestration utilities by governmental and nongovernmental entities; and • report to Congress on the regulatory requirements that apply to CO₂ pipelines and sequestration and recommend changes to laws, regulations or practices to support the development of CO₂ sequestration.
Section 144	Coordinated Permitting for Carbon Dioxide Pipeline and Sequestration Facilities	Provides for coordinated permitting of CO ₂ pipelines under the Fixing America’s Surface Transportation Act by amending the definition of “pipeline” to include pipelines for the transport of CO ₂ .
Section 145	Interagency Task Force on Carbon Dioxide Pipelines	Establishes an interagency CO ₂ pipeline task force that includes representatives from DOE, Interior, EPA, DOT, FERC, other appropriate federal agencies, and states and tribes. The task force would conduct annual workshops and prepare (within 5 years) a plan to establish a functioning national system of CO ₂ pipelines.

Section Number	Section Name	Description of Key Provisions
Title II	Innovation in Renewable Energy, Energy Efficiency, and Storage	
Section 201	Establishment of technology performance and cost targets	<p>Directs DOE to establish technology performance and cost targets for 15-year innovation and commercialization programs for:</p> <ul style="list-style-type: none"> renewable energy (including wind, solar, hydro, geothermal, biomass, renewable hydrogen, and advanced renewable manufacturing), energy storage technologies (mechanical, chemical, and thermal), including microgrids, transmission technologies, including HVDC, 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	<p>Directs DOE, the National Labs, other agencies and private and academic partners to carry out RD&D programs designed to achieve the cost & performance targets established under section 201; also</p> <ul style="list-style-type: none"> authorizes appropriations for section 201 projects, including: <ul style="list-style-type: none"> \$10 billion for renewables \$2 billion for storage \$3 billion for transmission directs DOE to establish a grants program to support early deployment of the section 201 advanced technologies, with a \$15 billion authorization; and directs DOE and other agencies to establish federal procurement goals and deadlines for the section 201 technologies.
Section 203	Updating mobile homes	Provides grants and technical assistance to facilitate replacement of older mobile homes with energy efficient modular homes; authorizes \$2.5 billion in annual appropriations per year for 5 years.
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	Solar and wind PTC extended to 1/1/31 (from 1/1/21)

Section 206	Renewal of qualifying advanced energy project credit	Renews the Section 48c Advanced Energy Manufacturing Tax Cred, eliminating the 2-year limit on its effective date.
Section 207	Performance-based energy efficiency tax credits for commercial and residential buildings	<p>Creates a tax credit (45V) for deep retrofits and the construction of zero-energy commercial and residential buildings.</p> <ul style="list-style-type: none"> • Deep retrofits use EE to reduce a building’s energy consumption by 50% or more. • Zero-energy-ready buildings meet specific criteria for high efficiency and preparation to add a solar energy system later. • Zero-energy buildings generate RE energy on-site that is equivalent to their demand. • Tax credit for zero-energy-ready buildings: <ul style="list-style-type: none"> --residential <4 units: \$5000 per unit --residential 5+ units: \$3500 per unit --commercial: \$3 per square foot • Additional tax credit (same amounts) is available if the building is certified to be zero energy over a 12-month period. • Tax credit for deep energy retrofits: <ul style="list-style-type: none"> --Residential: \$10,000 per unit, max \$1m per building --Commercial: \$25 per sq foot, max \$2m per building • Tax credits sunset when specific market milestones 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	<p>Would establish a new tax credit (45W) for US manufacturers of high-efficiency heat pumps and heat pump water heaters.</p> <ul style="list-style-type: none"> • Includes residential & commercial heat pump water heaters, space heating heat pumps, industrial heat pumps. • Includes electric and gas heat pumps. • Efficiency metrics and qualifying efficiency levels are specified • Incentives are: \$600 per unit for heat pump water heaters, \$800 per unit for residential space heating heat pumps, and \$18-36 per

		<p>1000Btu of heating capacity for commercial & industrial heat pumps</p> <ul style="list-style-type: none"> • Tax credit expires in 2030 • Based upon the 45M tax credit for appliances enacted by Congress in 2005 • Allows overseas production for 1st 2 years to permit reshoring of production facilities
Section 210	Other authorizations of appropriations	<p>Authorizes appropriations (FYs 21-24, in \$ millions) for:</p> <ul style="list-style-type: none"> • ARPA-E: 569; 713; 856; 1 billion • Regional Innovation: 100; 200; 300; 500 • Grid modernization: 238; 375; 513; 650 • Advanced wind: 178; 252; 326; 400 • Advanced solar: 360; 440; 520; 600 • Storage: 150 each year • Buildings: 381; 478; 574; 670 • Industry: 381; 478; 574; 840 • Enhanced geothermal: 100m over FY19 levels (\$30m R&D, \$70m demonstration)

Section Number	Section Name	Description of Key Provisions
Title III	EXISTING AND ADVANCED NUCLEAR POWER PLANTS	
Section 301	National Zero-Emissions Credit Program	<p>Creates a DOE program to provide Zero Emission Credits (ZECs) to existing nuclear plants, beginning 2 years after enactment.</p> <ul style="list-style-type: none"> • ZECs set at \$13.25 per MWh. • DOE may reduce the value of ZECs if they are not needed • revenue from CECs (title IV) is subtracted from the value of the ZEC. • ZEC program terminates 5 years after the first effective compliance date of the CES.
Section 302	Investment Tax Credit for Nuclear Energy Property	<ul style="list-style-type: none"> • Extends the ITC to qualified nuclear energy properties • Makes nuclear power put into service before 1/ 1/25 eligible for tax credit that starts at 30% (before 12/ 31/21), phases down to 26% in 2024, 22% in 2025, and phases out on 1/1/26 • Allows the assignment of the tax credit from qualified public entities without tax liability to an entity that can use the tax credit.
Section 303	Expanding Federal Clean Electricity Purchasing Requirements	<ul style="list-style-type: none"> • Increases the amount of clean electricity the federal government will purchase to 35% beginning in 2021 (from current 7.5% renewable energy); and • Allows nuclear and fossil with CCS to qualify as clean electricity; and • Allows DOE to enter into a long-term power purchase agreement for nuclear power when needed for national security or mission-critical activities.
Section 304	Authorization of Appropriations for Innovation in Nuclear Power	<p>Authorizes appropriations of \$1 billion annually for FY21-30 for:</p> <ul style="list-style-type: none"> • Gateway for Accelerated Innovation in Nuclear (GAIN) vouchers, which give grantees access to the nuclear testing and research facilities of the national labs; • Advanced Nuclear Technology Development Funding Opportunity announcements. • SMR R&D • Advanced reactor demonstration program

		<ul style="list-style-type: none"> Nuclear Reactor Innovation Center (\$60 million)
Section 305	Modernizing the Nuclear Regulatory Commission	<p>Directs the NRC to:</p> <ul style="list-style-type: none"> endeavor to reduce the administrative burden of licensing for advanced reactors; report to Congress on ways to improve NRC processes, procedures & regulations, including reforms that would enable 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 hearing for uncontested license applications; allow the use of informal hearing procedures unless the Commission decided formal procedure is necessary; make hearings on licenses for uranium enrichment facilities optional unless requested by a person with an interest; streamlines license application review process (within 2-year timeframe); and <p>Appropriates \$20 million per year for FYs 2021-30 for the above activities.</p>
Section 306	Demonstration and Early Deployment of Advanced Nuclear Reactors	<p>Requires DOE to advance the research and development of advanced nuclear by:</p> <ul style="list-style-type: none"> carrying out at least 5 advanced nuclear reactor demonstration projects; and authorizes appropriations of \$1 billion a year for FYs 2021-30 for these projects.
Section 307	Advanced Nuclear Fuel Security Program	Creates an advanced nuclear fuel security program to make limited quantities of high-assay, low-enriched uranium available for use in testing and demonstration of advanced reactors.
Section 308	Authorization of Appropriations for Loan Guarantees for Advanced Nuclear Facilities	Expands and extends the DOE loan guarantee program for advanced nuclear projects and authorizes \$10 billion in loans per year for FYs 2021-30.
Section 309	Expanding the Production Tax Credit for Advanced Nuclear Power	Expands the production tax credit for advanced nuclear power (Section 45J) by increasing the credit per kilowatt hour (from 1.8 cents/kWh to 2.7 cents per kWh) and the maximum amount of generation eligible for the credit (from 6,000 to 15,000 MW).

Title IV	Clean Electricity Standard	
Section 401	Certification of cost-effective market penetration of clean electricity technologies	<ul style="list-style-type: none"> • 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 either of the following conditions being met, no sooner than 5 years after enactment: <ol style="list-style-type: none"> 1. 3 GW of new zero-emissions capacity becomes commercially operational, <i>if</i>: <ol style="list-style-type: none"> a) 1GW is from coal with CCUS b) capacity that is >50% federally funded does not count; or 2. If the cost of new, firm clean generation is determined to be not more than 10% higher than existing generation • Directs DOE to certify when the criteria for market penetration are met; defines terms for eligible technologies.

Section 402	Federal clean electricity standard	<ul style="list-style-type: none"> • Establishes a federal CES that requires utilities to purchase clean energy in increasing amounts over time to achieve emissions targets (80% CO₂ reduction by 2050). • Emissions baseline is the year of enactment • First compliance period is 10 years after enactment, or 2 years after cost-effective market penetration (S.401) is achieved. • DOE shall project emissions requirements of 1st compliance period 2 years after enactment, to facilitate utility planning. • Alternative Compliance Payment (ACP): \$30 per MW, rising 5% annually, plus inflation • Clean Electricity Credits (CECs) are tradeable • Credits may be banked for future use. • Credits all generation with annual CO₂ intensity less than 0.825 metric tons per MWh. • Establishes civil penalties for noncompliance. • State and local programs are not preempted. • Exempts electricity suppliers that sold <20 MWh to consumers in the previous year • Directs DOE, in coordination with FERC, to consider dynamic crediting methodologies, which would base crediting on displaced CO₂. • Directs DOE to substitute a dynamic crediting methodology or methodologies for crediting purposes if approved.
Section 403	Regional Clean Electricity Planning Models.	<ul style="list-style-type: none"> • Directs DOE to make available to the states one or more methodologies for regional clean electricity planning that could facilitate compliance with the CES at least cost and consistent with reliability needs.
Section 404	Stand-by emissions performance standards	<ul style="list-style-type: none"> • DOE shall consult with EPA and annually determine average sectoral GHG emissions. • EPA may enforce GHG performance standards for power plants under Clean Air Act title I if: <ul style="list-style-type: none"> • sectoral emissions rise by >6%, or • programs authorized under this act are not fully funded, or • the CES is not being enforced