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116TH CONGRESS
2D SESSION

# H. R. 9054

To advance clean power technology development and use through innovation and clean energy standards, and for other purposes.

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IN THE HOUSE OF REPRESENTATIVES

DECEMBER 28, 2020

Mr. MCKINLEY (for himself and Mr. SCHRADER) introduced the following bill; which was referred to the Committee on Energy and Commerce, and in addition to the Committees on Science, Space, and Technology, Ways and Means, Natural Resources, Transportation and Infrastructure, and Oversight and Reform, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

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# A BILL

To advance clean power technology development and use through innovation and clean energy standards, and for other purposes.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,*

**SECTION 1. SHORT TITLE; PURPOSES.**

(a) SHORT TITLE.—This Act may be cited as the ''Clean Energy Future Through Innovation Act of 2020''.

(b) PURPOSES.—The purposes of this Act are—

(1) to further develop, demonstrate, and deploy a broad range of advanced low- and zero-carbon power technologies, including technologies related to the generation, storage, transmission, security, resilience, and efficient use of electric power; and

(2) to build a competitive market for advanced low- and zero-carbon technologies and a robust workforce, supply chain, and related legal, commercial, and physical infrastructure.

**SEC. 2. DEFINITIONS; TABLE OF CONTENTS.**

(a) DEFINITIONS.—Except as otherwise provided, in this Act:

(1) SECRETARY.—The term ''Secretary'' means the Secretary of Energy.

(2) DEPARTMENT.—The term ''Department'' means the Department of Energy.

(b) TABLE OF CONTENTS.—The table of contents for this Act is as follows:

# TITLE I—CARBON CAPTURE, UTILIZATION, AND STORAGE

## Subtitle A—Research, Development, and Demonstration for Carbon Capture, Utilization, and Storage Technologies

**SEC. 111. FOSSIL ENERGY OBJECTIVES.**

Section 961 of the Energy Policy Act of 2005 (42 U.S.C. 16291) is amended—

(1) in subsection (a), by adding at the end the following:

''(8) Improving the conversion, use, and storage of carbon dioxide produced from fossil fuels.

''(9) Lowering greenhouse gas emissions for all fossil fuel production, generation, delivery, and utilization in electricity generation and other industry, to the maximum extent possible.

''(10) Preventing, predicting, monitoring, and mitigating the unintended leaking of carbon dioxide or other fossil fuel-related emissions into the atmosphere.

''(11) Developing carbon utilization technologies, products, and methods, including carbon use and reuse for commercial application.

''(12) Developing carbon capture technologies, including direct air capture technologies.'';

(2) in subsection (b), by striking paragraphs (1) through (3) and inserting the following:

''(1) $2,200,000,000 for fiscal year 2021;

''(2) $2,200,000,000 for fiscal year 2022;

''(3) $2,200,000,000 for fiscal year 2023;

''(4) $2,200,000,000 for fiscal year 2024; and

''(5) $2,200,000,000 for fiscal year 2025.''; and

(3) by striking subsections (c) through (e) and inserting the following:

''(c) LIMITATION.—None of the funds authorized under this section may be used for Fossil Energy Environmental Restoration or Import/Export Authorization.''.

**SEC. 112. CARBON CAPTURE TECHNOLOGIES.**

(a) CARBON CAPTURE PROGRAM.—Section 962 of the Energy Policy Act of 2005 (42 U.S.C. 16292) is amended to read as follows:

**''SEC. 962. CARBON CAPTURE TECHNOLOGIES.**

''(a) IN GENERAL.—The Secretary shall conduct a program of research, development, demonstration, and

commercial application of carbon capture technologies. The program shall advance the development and use of—

''(1) carbon capture technologies in conjunction with coal and natural gas utilization in power systems and industry;

''(2) innovations to improve the efficiency of, and decrease emissions at, existing power plants;

''(3) advanced separation technologies and direct air capture technologies; and

''(4) carbon capture technologies used in conjunction with the production from fossil fuel of hydrogen or ammonia to be used in power systems.

''(b) COAL APPLICATIONS.—In conducting the program under subsection (a), the Secretary shall devote substantial resources to carbon capture technologies for coal applications.

''(c) LARGE-SCALE PILOTS.—

''(1) IN GENERAL.—In supporting technology development activities under this section, the Secretary is encouraged to support large-scale pilot projects that test carbon capture technologies on power systems. Support for such large-scale pilot projects shall be subject to the cost sharing requirements in section 988(b).

''(2) DEFINITION.—For purposes of this section, the term 'large-scale pilot project' means a pilot project that—

''(A) represents the scale of technology development beyond laboratory development and bench scale testing, but not yet advanced to the point of being tested under operational conditions at commercial scale;

''(B) represents the scale of technology necessary to gain the operational data needed to understand the technical and performance risks of the technology before the application of that technology at commercial scale or in commercial-scale demonstration; and

''(C) is large enough—

''(i) to validate scaling factors; and

''(ii) to demonstrate the interaction between major components so that control philosophies for a new process can be developed and enable the technology to advance from large-scale pilot plant application to commercial-scale demonstration or application.

''(d) COST AND PERFORMANCE GOALS.—In carrying out the development, demonstration, and commercial ap-

plication activities under subsection (a), the Secretary shall consider cost and performance goals, in order to advance development and deployment of carbon capture technologies that can become cost competitive in commercial applications.

''(e) CARBON CAPTURE PILOT TEST CENTERS.—

''(1) IN GENERAL.—Not later than 1 year after the date of the enactment of the Clean Energy Future Through Innovation Act of 2020, the Secretary shall award grants to one or more entities for the operation of Carbon Capture Test Centers (in this subsection referred to as the 'Centers') to provide unique testing capabilities for innovative power system technologies to capture carbon dioxide or otherwise produce a carbon dioxide stream suitable for utilization or storage.

''(2) PURPOSE.—The Centers shall—

''(A) advance research, development, demonstration, and commercial application of carbon capture technologies for power systems; and

''(B) test technologies that represent the scale of technology development beyond laboratory testing, but not yet advanced to testing

under operational conditions at commercial scale.

''(3) APPLICATION.—An entity seeking to operate a Center under this subsection shall submit to the Secretary an application at such time and in such manner as the Secretary may require.

''(4) CRITERIA.—In evaluating applications to operate the Centers under this subsection, the Secretary shall prioritize grants to applicants that meet one or more of the following criteria:

''(A) The applicant has access to existing or planned research facilities with modular technology capabilities.

''(B) The applicant is an institution of higher education with established expertise in engineering and design for carbon capture technologies, or has a partnership with such an institution.

''(C) The applicant has access to existing research and test facilities for precombustion, postcombustion, or oxy-combustion technologies.

''(D) The applicant has capability to test integration of carbon capture technologies with utility-scale power plants.

''(E) Commercial market participants, including equipment and technology suppliers and power generators, are involved in the proposed Center.

''(5) CONSIDERATIONS.—In awarding grants for the operation of the Centers under this subsection, the Secretary shall ensure that—

''(A) the Centers support pilot testing appropriate to diverse regions and resource characteristics; and

''(B) each Center receiving such a grant demonstrates unique research capabilities, unique regional benefits, or new technology development opportunities.

''(6) SCHEDULE.—Each grant to operate a Center under this subsection shall be awarded for a term of not more than 5 years, subject to the availability of appropriations. The Secretary may renew such 5-year term without limit, subject to a rigorous merit review.

''(7) COST SHARING.—The Secretary shall require cost sharing under this subsection in accordance with section 988(b).

''(8) TERMINATION.—The Secretary may eliminate a Center during any 5-year term described in

paragraph (6) if such Center is found to be underperforming.

''(f) DEMONSTRATION PROJECTS.—

''(1) IN GENERAL.—The Secretary may fund commercial-scale demonstration projects for power systems that test the scale of technology necessary for commercial operation, in accordance with this subsection.

''(2) ENGINEERING AND DESIGN STUDIES.—The Secretary is authorized to fund engineering and design studies for commercial-scale demonstration projects for power systems in addition to, or in advance of, issuing an award for a demonstration project under this subsection.

''(3) APPLICATION.—An entity seeking an award to conduct a demonstration project under this subsection shall submit to the Secretary an application at such time and in such manner as the Secretary may require.

''(4) LIMITATIONS.—The Secretary may only provide an award under this subsection after reviewing each application regarding—

''(A) the financial strength of the applicant;

''(B) the construction schedule for the proposed demonstration project;

''(C) the market risk faced by the technology to be demonstrated; and

''(D) the experience of the applicant and construction contractor with similar projects.

''(5) REQUIREMENTS.—A demonstration project funded under this subsection shall—

''(A) utilize technologies that have completed pilot-scale testing or the equivalent, as determined by the Secretary;

''(B) secure and maintain agreements for the utilization or sequestration of captured carbon dioxide; and

''(C) upon completion, demonstrate carbon capture technologies on a power system.

''(6) COST SHARING.—The Secretary shall require cost sharing under this subsection in accordance with section 988.

''(g) DEFINITION OF POWER SYSTEM.—In this section, the term 'power system' means any electricity generating unit that utilizes fossil fuels to generate electricity provided to the electric grid or directly to a consumer.

''(h) AUTHORIZATION OF APPROPRIATIONS.—For activities under this section, there are authorized to be appropriated to the Secretary—

''(1) $600,000,000 for fiscal year 2021;

''(2) $600,000,000 for fiscal year 2022;

''(3) $600,000,000 for fiscal year 2023;

''(4) $600,000,000 for fiscal year 2024; and

''(5) $600,000,000 for fiscal year 2025.''.

(b) GAO STUDY.—

(1) IN GENERAL.—The Comptroller General of the United States shall conduct a study of the Department's successes, failures, practices, and improvements in carrying out demonstration projects for carbon capture technologies for power systems. In conducting the study, the Comptroller General shall consider, at a minimum—

(A) applicant and contractor qualifications;

(B) project management practices at the Department;

(C) economic or market changes and other factors impacting project viability;

(D) completion of third-party agreements, including power purchase agreements and carbon dioxide offtake agreements;

(E) regulatory challenges; and

(F) construction challenges.

(2) REPORT.—Not later than 3 years after the date of enactment of this Act, the Comptroller General of the United States shall submit to Congress a report on the results of the study required under paragraph (1).

(3) CONSIDERATION.—The Secretary shall consider any relevant recommendations, as determined by the Secretary, provided in the study required under paragraph (1), and shall adopt such recommendations as the Secretary considers appropriate.

(4) POWER SYSTEM DEFINED.—In this section, the term ''power system'' means any electricity generating unit that utilizes fossil fuels to generate electricity provided to the electric grid or directly to a consumer.

**SEC. 113. CARBON STORAGE VALIDATION AND TESTING.**

Section 963 of the Energy Policy Act of 2005 (42 U.S.C. 16293) is amended to read as follows:

**''SEC. 963. CARBON STORAGE VALIDATION AND TESTING.**

''(a) CARBON STORAGE.—The Secretary shall carry out a program of research, development, and demonstration for carbon storage. The program shall—

''(1) in coordination with relevant Federal agencies, develop and maintain mapping tools and resources that assess the capacity of geologic storage formations in the United States;

''(2) develop monitoring tools, modeling of geologic formations, and analyses to predict and verify carbon dioxide containment and account for sequestered carbon dioxide in geologic storage sites;

''(3) research potential environmental, safety, and health impacts in the event of a leak to the atmosphere or to an aquifer, and any corresponding mitigation actions or responses to limit harmful consequences;

''(4) evaluate the interactions of carbon dioxide with formation solids and fluids, including the propensity of injections to induce seismic activity;

''(5) assess and ensure the safety of operations related to geologic sequestration of carbon dioxide;

''(6) determine the fate of carbon dioxide concurrent with and following injection into geologic formations; and

''(7) provide information to State, local, and Tribal governments, the Environmental Protection Agency, and other appropriate entities, to support development of a regulatory framework for commer-

cial-scale sequestration operations that ensure the protection of human health and the environment.

''(b) GEOLOGIC SETTINGS.—In carrying out research activities under this section, the Secretary shall consider a variety of candidate geologic settings, including—

''(1) operating oil and gas fields;

''(2) depleted oil and gas fields;

''(3) residual oil zones;

''(4) unconventional reservoirs and rock types;

''(5) unmineable coal seams;

''(6) deep saline formations;

''(7) deep geologic systems that may be used as engineered reservoirs to extract economical quantities of brine from geothermal resources of low permeability or porosity;

''(8) deep geologic systems containing in situ carbon dioxide mineralization formations; and

''(9) offshore geologic formations.

''(c) REGIONAL CARBON SEQUESTRATION PARTNERSHIPS.—

''(1) IN GENERAL.—The Secretary shall carry out large-scale carbon sequestration demonstrations for geologic containment of carbon dioxide to collect and validate information on the cost and feasibility of commercial deployment of technologies for the

geologic containment of carbon dioxide. The Secretary may fund new demonstrations or expand the work completed at one or more of the existing regional carbon sequestration partnerships.

''(2) DEMONSTRATION COMPONENTS.—Each demonstration described in paragraph (1) shall include longitudinal tests involving carbon dioxide injection and monitoring, mitigation, and verification operations.

''(3) CLEARINGHOUSE.—The National Energy Technology Laboratory shall act as a clearinghouse of shared information and resources for the regional carbon sequestration partnerships and any new demonstrations funded under this section.

''(4) REPORT.—Not later than 1 year after the date of enactment of the Clean Energy Future Through Innovation Act of 2020, the Secretary shall provide to Congress a report that—

''(A) assesses the progress of all regional carbon sequestration partnerships;

''(B) identifies the remaining challenges in achieving carbon sequestration that is reliable and safe for the environment and public health; and

''(C) creates a roadmap to integrate geologic sequestration sites and carbon utilization with large sources of carbon dioxide in the United States economy.

''(5) LARGE-SCALE CARBON SEQUESTRATION DEMONSTRATION.—For purposes of this subsection, 'large-scale carbon sequestration demonstration' means the injection of more than 1,000,000 tons of carbon dioxide annually or injection at a scale that demonstrates the ability to inject and sequester several million metric tons carbon dioxide for at least 10 years.

''(d) INTEGRATED STORAGE PROJECTS.—The Secretary may carry out a program for purposes of transitioning the large-scale storage demonstrations under subsection (c) into integrated, commercial storage complexes. The program shall focus on—

''(1) qualifying geologic storage sites in order to accept large volumes of carbon dioxide acceptable for commercial contracts;

''(2) understanding the technical and commercial viability of storage sites;

''(3) developing the qualification processes that will be necessary for a diverse range of geologic storage sites to commercially accept carbon dioxide; and

''(4) any other activities the Secretary deems necessary to transition the large-scale demonstration storage projects into commercial ventures.

''(e) COST SHARING.—The Secretary shall require cost sharing under this section in accordance with section 988.

''(f) FEDERAL DATA COLLECTION.—The Secretary, in coordination with other Federal agencies including the United States Geological Survey, shall continue and expand ongoing Federal data collection and analysis activities related to carbon dioxide storage, economics, and spatial relationships on a local and regional scale, in coordination with State and regional entities.

''(g) AUTHORIZATION OF APPROPRIATIONS.—For activities under this section, there are authorized to be appropriated to the Secretary—

''(1) $250,000,000 for fiscal year 2021;

''(2) $250,000,000 for fiscal year 2022;

''(3) $250,000,000 for fiscal year 2023;

''(4) $250,000,000 for fiscal year 2024; and

''(5) $250,000,000 for fiscal year 2025.''.

**SEC. 114. CARBON UTILIZATION.**

(a) PROGRAM.—Subtitle F of title IX of the Energy Policy Act of 2005 (42 U.S.C. 16291 et seq.) is amended by adding at the end the following:

**"SEC. 969. CARBON UTILIZATION.**

"(a) IN GENERAL.—The Secretary shall carry out a program of research, development, and demonstration for carbon utilization. The program shall—

"(1) assess and monitor potential changes in life cycle carbon dioxide emissions, and other environmental safety indicators of new technologies, practices, processes, or methods, used in enhanced hydrocarbon recovery;

"(2) identify and evaluate novel uses for carbon, including the conversion of carbon dioxide for commercial and industrial products, such as—

"(A) chemicals;

"(B) plastics;

"(C) building materials;

"(D) fuels;

"(E) cement; or

"(F) products of coal utilization in power systems (as such term is defined in section 962(e)), or other applications; and

"(3) identify and develop alternative uses for coal, including products derived from carbon engineering, carbon fiber, and coal conversion methods.

"(b) AUTHORIZATION OF APPROPRIATIONS.—For activities under this section, there are authorized to be appropriated to the Secretary—

''(1) $75,000,000 for fiscal year 2021;

''(2) $75,000,000 for fiscal year 2022;

''(3) $75,000,000 for fiscal year 2023;

''(4) $75,000,000 for fiscal year 2024; and

''(5) $75,000,000 for fiscal year 2025.''.

(b) STUDY.—No later than one year following the date of enactment of the Clean Energy Future Through Innovation Act of 2020, the Secretary shall enter into an agreement with the National Academies to conduct a study assessing the barriers and opportunities related to commercializing the utilization of carbon dioxide in the United States. Such study shall—

(1) analyze the technical feasibility and related challenges to commercial utilization of carbon dioxide, including—

(A) creating a national system of carbon dioxide pipelines;

(B) mitigating environmental impacts; and

(C) regional economic challenges and opportunities;

(2) identify potential markets, industries, or sectors that may benefit from greater access to commercial carbon dioxide;

(3) assess the current state of infrastructure and any necessary updates to allow for the integra-

tion of safe and reliable carbon dioxide transportation, utilization, and storage;

(4) estimate the economic impact of a well-integrated national carbon dioxide pipeline system;

(5) assess the global status and progress of carbon utilization technologies (both chemical and biological) in practice today that utilize waste carbon (including carbon dioxide, carbon monoxide, methane, and biogas) from power generation, biofuels production, and other industrial processes;

(6) identify emerging technologies and approaches for carbon utilization that show promise for scale-up, demonstration, deployment, and commercialization;

(7) analyze the factors associated with making carbon utilization technologies viable at a commercial scale, including carbon waste stream availability, economics, market capacity, energy, and lifecycle requirements;

(8) assess the major technical challenges associated with increasing the commercial viability of carbon reuse technologies, and identify the research and development questions that will address those challenges;

(9) assess current research efforts, including basic, applied, engineering, and computational, that are addressing these challenges and identify gaps in the current research portfolio; and

(10) develop a comprehensive research agenda that addresses both long- and short-term research needs and opportunities.

**SEC. 115. ADVANCED ENERGY SYSTEMS.**

Subtitle F of title IX of the Energy Policy Act of 2005 (42 U.S.C. 16291 et seq.) is further amended by adding at the end the following:

**"SEC. 969A. ADVANCED ENERGY SYSTEMS.**

''(a) IN GENERAL.—The Secretary shall carry out a program of research, development, demonstration, and commercial application of technologies that represent a significant change in the methods used to generate electricity from fuels and that will enable a step change in performance, efficiency, and cost of electricity, and that reduce emissions from fossil fuel power generation in the following areas:

''(1) High-efficiency turbines for any advanced power system that will lead to natural gas turbine combined cycle efficiency of 67 percent or combustion turbine efficiency of 50 percent.

''(2) Supercritical carbon dioxide, with an emphasis on developing directly fired and indirectly fired cycles in the next 10 years.

''(3) Advanced combustion systems, including oxy-combustion systems and chemical looping.

''(4) Gasification systems to enable carbon capture, improve efficiency, and reduce capital and operating costs.

''(5) Thermal cycling with ramping or rapid black start capabilities that do not compromise efficiency or environmental performance.

''(6) Small-scale and modular technologies with reduced carbon outputs or carbon capture that can support incremental power generation capacity needs.

''(7) Turbines and other technology for the use of hydrogen and ammonia generated from fossil fuels for power generation.

''(b) PRIORITY.—In carrying out the program under subsection (a), the Secretary shall give priority to potentially transformational technologies that would enable very substantial improvements in performance, efficiency, or cost of electricity as compared to the technology in existence on the date of enactment of this section.

''(c) AUTHORIZATION OF APPROPRIATIONS.—For activities under this section, there are authorized to be appropriated to the Secretary $1,275,000,000 for each of fiscal years 2021 through 2025.''.

# Subtitle B—Deployment of Carbon Capture, Utilization, and Storage With Commercial-Scale Electricity Generation Facilities

**SEC. 121. DEPLOYMENT OF CARBON CAPTURE, UTILIZATION, AND STORAGE TECHNOLOGY WITH COMMERCIAL-SCALE ELECTRICITY GENERATION FACILITIES.**

(a) IN GENERAL.—Subtitle B of title IV of the Energy Policy Act of 2005 (42 U.S.C. 15971 et seq.) is amended by adding after section 417 the following:

**''SEC. 418. FEDERAL SUPPORT FOR DEPLOYMENT OF CARBON CAPTURE, UTILIZATION, AND STORAGE WITH ELECTRICITY GENERATION.**

''(a) IN GENERAL.—Subject to the limitations in subsection (b), the Secretary shall provide support for deployment and use of carbon capture, utilization, and storage at commercial-scale electricity generation facilities by entering into a contract for differences, which may not exceed a term of more than 30 years, to provide price certainty for the sale of the electricity generated by, or carbon

dioxide captured by, an eligible power system to a third party.

''(b) LIMITATIONS.—

''(1) INITIAL CAP.—Except as provided in paragraph (2), the Secretary may not provide support described in subsection (a)—

''(A) for eligible power systems with more than 3 gigawatt of cumulative electricity generating capacity; or

''(B) in a cumulative amount projected to have a value exceeding $10,000,000,000.

''(2) ADDITIONAL SUPPORT REQUIRED.—If the Secretary determines, based on the study undertaken pursuant to subsection (c), that additional support for the commercial-scale deployment of carbon capture, utilization, and storage at electricity generation facilities beyond that provided under paragraph (1) is required to establish the market viability of carbon capture, utilization and storage consistent with the purposes of this title, the Secretary may provide support under subsection (a) for additional eligible power systems with not more than 8 gigawatts of additional cumulative electricity generating capacity.

''(c) STUDY.—The Secretary shall conduct a study to evaluate whether the support provided under subsection (a), combined with other Federal programs and policies and with commercial technology deployments, has established the market viability of using carbon capture, utilization, and storage at commercial-scale electricity generating facilities consistent with the purposes of this title. The study shall be initiated no later than the earlier of—

''(1) the date the Secretary reaches the initial cap on support for eligible power systems in subsection (b)(1); or

''(2) the date that is 7 years after the date of enactment of this section.

''(d) APPLICATION.—

''(1) IN GENERAL.—An entity seeking support provided under subsection (a) shall submit to the Secretary an application at such time and in such manner as the Secretary may require.

''(2) CRITERIA.—In evaluating such an application, the Secretary shall consider technical, financial, and other factors that the Secretary determines appropriate.

''(e) CONSIDERATIONS.—In implementing subsection (a), the Secretary shall seek to support the use of carbon capture, utilization, and storage with projects covering di-

verse fuel types and technologies, including first-of-its-kind technology for carbon capture, utilization, and storage capacity.

''(f) DEFINITIONS.—In this section:

''(1) POWER SYSTEM.—The term 'power system' means an electricity generating unit that utilizes fossil fuels to generate electricity that is provided to the electric grid or directly to a consumer.

''(2) ELIGIBLE POWER SYSTEM.—The term 'eligible power system' means a power system that—

''(A) is equipped with carbon capture technology, or otherwise produces a separate carbon dioxide stream that is suitable for utilization or storage;

''(B) is designed to capture carbon dioxide that would otherwise be emitted by the power system; and

''(C) will utilize or store the captured carbon dioxide, or has contracted with one or more other entities to utilize or store the captured carbon dioxide.''.

(b) TABLE OF CONTENTS AMENDMENT.—The table of contents for the Energy Policy Act of 2005 is amended by adding after the item relating to section 417 the following:

''Sec. 418. Federal support for deployment of carbon capture, utilization, and storage with electricity generation.''.

# Subtitle C—Federal Support for Commercial Deployment of Carbon Capture, Utilization, and Storage

**SEC. 131. ENHANCEMENT OF CARBON DIOXIDE SEQUESTRATION CREDIT.**

(a) EXTENSION OF CREDIT PERIOD.—Section 45Q(a) of the Internal Revenue Code of 1986 is amended—

(1) by striking ''12-year'' in paragraph (3)(A) and inserting ''20-year''; and

(2) by striking ''12-year'' in paragraph (4)(A) and inserting ''20-year''.

(b) EXTENSION OF QUALIFIED FACILITY CONSTRUCTION BEGINNING DATE.—Section 45Q(d)(1) of such Code is amended by striking ''January 1, 2024'' and inserting ''January 1, 2033''.

**SEC. 132. REFORM OF LOAN GUARANTEE PROGRAM.**

Section 1703 of the Energy Policy Act of 2005 (42 U.S.C. 16513) is amended—

(1) by striking subsection (e) and inserting the following:

''(e) QUALIFICATION OF FACILITIES RECEIVING TAX CREDITS OR FINANCIAL ASSISTANCE.—Notwithstanding

any other provision of law, a project that receives tax credits or other financial assistance for clean coal technology shall not be disqualified from receiving a guarantee under this subchapter.''; and

(2) by inserting the following new subsection after subsection (e):

''(f) IMPLEMENTION.—In implementing the authority under this section with respect to loan guarantees issued after the date of enactment of the Clean Energy Future Through Innovation Act of 2020, the Secretary shall—

''(1) adjust fees and application requirements to the scale of a project to ensure that the costs of preparing and submitting an application are not an undue barrier to participation by smaller, lower risk projects;

''(2) ensure that program credit rating requirements do not, as applied, act as an obstacle to participation in the loan guarantee program by first-of-a-kind projects, consistent with the purpose of the loan guarantee program to enable debt financing for first-of-a-kind projects that would not otherwise have access to commercial debt markets; and

''(3) for first-of-a-kind projects, cover the cost of the guarantee with appropriated funds rather

than requiring the borrower to pay some or all of the cost of the guarantee under section 1702(b).''.

**SEC. 133. PRIVATE ACTIVITY BONDS FOR CARBON DIOXIDE CAPTURE FACILITIES.**

(a) IN GENERAL.—Section 142(a) of the Internal Revenue Code of 1986 is amended by striking ''or'' at the end of paragraph (14), by striking the period at the end of paragraph (15) and inserting '', or'', and by adding at the end the following new paragraph:

''(16) qualified carbon dioxide capture facilities.''.

(b) QUALIFIED CARBON DIOXIDE CAPTURE FACILITY.—Section 142 of such Code is amended by adding at the end the following new subsection:

''(n) QUALIFIED CARBON DIOXIDE CAPTURE FACILITY.—

''(1) IN GENERAL.—For purposes of subsection (a)(16), the term 'qualified carbon dioxide capture facility' means the eligible components of an industrial carbon dioxide facility.

''(2) DEFINITIONS.—For purposes of this subsection—

''(A) ELIGIBLE COMPONENT.—The term 'eligible component' means, with respect to any

industrial carbon dioxide facility, any component installed in such facility that—

"(i) satisfies the requirements under paragraph (3), and

"(ii)(I) is used for the purpose of capture, treatment and purification, compression, transportation, or on-site storage of carbon dioxide produced by such facility, or

"(II) is integral or functionally related and subordinate to a process described in section 48B(c)(2) (determined by substituting 'carbon dioxide' for 'carbon monoxide').

"(B) INDUSTRIAL CARBON DIOXIDE FACILITY.—

"(i) IN GENERAL.—The term 'industrial carbon dioxide facility' means a facility that emits carbon dioxide (including from any fugitive emissions source) that is created as a result of any of the following processes:

"(I) Fuel combustion for electricity generation or other purposes.

''(II) Gasification for electricity generation or other purposes.

''(III) Bioindustrial.

''(IV) Fermentation.

''(V) Any manufacturing industry described in section 48B(c)(7).

''(ii) EXCEPTIONS.—Such term shall not include—

''(I) any geological gas facility, or

''(II) any air separation unit that does not qualify as gasification equipment or is not a necessary component of an oxy-fuel combustion process, a supercritical carbon dioxide process, or other advanced power system.

''(iii) GEOLOGICAL GAS FACILITY.—The term 'geological gas facility' means a facility that—

''(I) produces a raw product consisting of gas or mixed gas and liquid from a geological formation,

''(II) transports or removes impurities from such product, or

''(III) separates such product into its constituent parts.

"(3) CAPTURE AND STORAGE REQUIREMENT.—For purposes of this subsection—

"(A) IN GENERAL.—Except as provided in subparagraph (B), a component shall not be treated as meeting the requirements of this paragraph with respect to an industrial carbon dioxide facility unless such component has a capture and storage percentage that is at least 65 percent.

"(B) EXCEPTION.—In the case of an industrial carbon dioxide facility with a capture and storage percentage that is less than 65 percent, a component with respect to such facility shall not be treated as meeting the requirements of this paragraph unless the percentage of the cost of such component that is financed by tax-exempt bonds is not greater than such capture and storage percentage.

"(C) CAPTURE AND STORAGE PERCENTAGE.—

"(i) IN GENERAL.—The capture and storage percentage shall be an amount, expressed as a percentage, equal to the quotient of—

''(I) the total metric tons of carbon dioxide annually captured, transported, and injected into a facility for geologic storage, or an enhanced oil or gas recovery well followed by geologic storage, divided by

''(II) the total metric tons of carbon dioxide which would otherwise be released into the atmosphere each year as industrial emission of greenhouse gas if the component were not installed in the industrial carbon dioxide facility.

''(ii) LIMITED APPLICATION OF ELIGIBLE COMPONENTS.—In the case of eligible components that are designed to capture carbon dioxide solely from specific sources of emissions or portions thereof within an industrial carbon dioxide facility, the capture and storage percentage under this subparagraph shall be determined based only on such specific sources of emissions or portions thereof.''.

(c) VOLUME CAP.—Section 146(g)(4) of such Code is amended by striking ''paragraph (11) of section 142(a)

(relating to high-speed intercity rail facilities)'' and inserting ''paragraph (11) or (16) of section 142(a)''.

(d) CLARIFICATION OF PRIVATE BUSINESS USE.—Section 141(b)(6) of such Code is amended by adding at the end the following new subparagraph:

''(C) CLARIFICATION RELATING TO QUALIFIED CARBON DIOXIDE CAPTURE FACILITIES.—For purposes of this subsection, the sale of carbon dioxide produced by a qualified carbon dioxide capture facility (as defined in section 142(n)) which is owned by a governmental unit shall not constitute private business use.''.

(e) EFFECTIVE DATE.—The amendments made by this section shall apply to obligations issued after the date of enactment of this Act.

**SEC. 134. EXTENSION OF PUBLICLY TRADED PARTNERSHIP OWNERSHIP STRUCTURE.**

(a) IN GENERAL.—Section 7704(d)(1)(E) of the Internal Revenue Code of 1986 is amended—

(1) by striking ''income and gains derived from the exploration'' and inserting ''income and gains derived from any of the following:

''(i) The exploration''; and

(2) by inserting a period after ''40A(d)(1)'' and inserting thereafter the following:

"(ii) The production, storage, or transportation of any fuel which—

"(I) uses carbon dioxide captured from an anthropogenic source or the atmosphere as its primary feedstock, and

"(II) is determined by the Secretary, in consultation with the Secretary of Energy and the Administrator of the Environmental Protection Agency, to achieve a reduction of not less than a 60 percent in lifecycle greenhouse gas emissions (as defined in section 211(o)(1)(H) of the Clean Air Act) compared to baseline lifecycle greenhouse gas emissions (as defined in section 211(o)(1)(C) of such Act).

This clause shall not apply to any fuel which uses as its primary feedstock carbon dioxide which is deliberately released from naturally occurring subsurface springs.

"(iii) The production of any product or the generation of electric power from a project—

''(I) which meets the requirements of subparagraphs (A) and (B) of section 48B(c)(1), and

''(II) not less than 75 percent of the total carbon dioxide emissions of which is qualified carbon oxide (as defined in section 45Q(c)) which is disposed of or utilized as provided in paragraph (6).

''(iv) The generation or storage of electric power (including associated income from the sale or marketing of energy, capacity, resource adequacy, and ancillary services) produced from any power generation facility which is, or from any power generation unit within, a qualified facility under section 45Q(d) and not less than 50 percent (30 percent in the case of a facility or unit placed in service before January 1, 2017) of the total carbon dioxide emissions of which is qualified carbon oxide which is disposed of or utilized as provided in paragraph (7).

''(v) The sale of any good or service from any facility (other than a power gen-

eration facility) which is a qualified facility described in section 45Q(c) and the captured qualified carbon oxide (as so defined) of which is disposed of as provided in paragraph (6).''.

(b) DISPOSAL AND UTILIZATION OF CAPTURED CARBON DIOXIDE.—Section 7704(d) of such Code is amended by adding at the end the following new paragraph:

''(6) DISPOSAL AND UTILIZATION OF CAPTURED CARBON DIOXIDE.—For purposes of clauses (iii)(II) and (iv)(II) of paragraph (1)(E), carbon dioxide is disposed of or utilized as provided in this paragraph if such carbon dioxide is—

''(A) placed into secure geological storage (as determined under section 45Q(f)(2)),

''(B) used as a tertiary injectant (as defined in section 45Q(e)(3)) in a qualified enhanced oil or natural gas recovery project (as defined in section 45Q(e)(2)) and placed into secure geological storage (as so determined),

''(C) fixed through photosynthesis or chemosynthesis (including through the growing of algae or bacteria),

''(D) chemically converted to a material or chemical compound in which it is securely stored, or

''(E) used for any other purpose which the Secretary determines has the potential to strengthen or significantly develop a competitive market for carbon dioxide captured from man-made sources.''.

(c) EFFECTIVE DATE.—The amendments made by this section shall take effect on the date of the enactment of this Act, in taxable years ending after such date.

**SEC. 135. PRODUCTION TAX CREDIT FOR CERTAIN ELECTRICITY GENERATION USING CARBON CAPTURE UTILIZATION AND STORAGE.**

(a) IN GENERAL.—Subpart D of part IV of subchapter A of chapter 1 of the Internal Revenue Code of 1986 is amended by adding at the end the following new section:

**''SEC. 45U. ELECTRICITY PRODUCED USING CARBON CAPTURE UTILIZATION AND STORAGE TECHNOLOGY.**

''(a) GENERAL RULE.—For purposes of section 38, the carbon capture production credit for any taxable year is an amount equal to—

''(1) in the case of a qualified facility using fossil fuels, the product of—

''(A) the megawatt hours of electricity—

''(i) produced by the taxpayer at a qualified facility during the 20-year period beginning on the date the facility was originally placed in service, and

''(ii) sold by the taxpayer to an unrelated person during the taxable year, multiplied by

''(B)(i) $30 per megawatt hour in the case of a qualified facility storing carbon in secure geological storage, or

''(ii) $24 per megawatt hour in the case of a qualified facility using captured carbon oxide as a tertiary injectant in a qualified enhanced oil or natural gas recovery project, multiplied by

''(C) the discount factor,

''(2) in the case of electricity generation facilities using exclusively qualified hydrogen, qualified ammonia, or qualified blends, the product of—

''(A) the megawatt hours of electricity—

''(i) produced by the taxpayer at a qualified facility during the 20-year period

beginning on the date the facility was originally placed in service, and

"(ii) sold by the taxpayer to an unrelated person during the taxable year, multiplied by

"(B) $100 per megawatt hour.

"(b) DEFINITIONS.—For purposes of this section:

"(1) DISCOUNT FACTOR.—The term 'discount factor' means an amount equal to 90 divided by the annual carbon dioxide emissions rate expressed in pounds per megawatt-hour for a qualified facility, except that—

"(A) if the annual carbon dioxide emissions rate for a qualified facility is less than 90 pounds per megawatt-hour, the discount factor is equal to 1, and

"(B) if the annual carbon dioxide emissions rate for a qualified facility is greater 180 pounds per megawatt-hour, the discount factor is equal to 0.

"(2) QUALIFIED AMMONIA.—The term 'qualified ammonia' means ammonia fuel produced with less than 17.5 pounds of carbon dioxide emissions per million Btu of gross fuel heating value.

''(3) QUALIFIED BLEND.—The term 'qualified blend' means a blend of qualified hydrogen or qualified ammonia with fossil fuel in which the fossil fuel provides no more than 30 percent of the heating value input.

''(4) QUALIFIED FACILITY.—The term 'qualified facility' means an electricity generation plant that—

''(A) is equipped with carbon capture equipment, the construction of which commenced before January 1, 2033,

''(B) captures carbon oxide using carbon capture equipment,

''(C) stores captured carbon oxide in secure geological storage or uses captured carbon oxide as a tertiary injectant in a qualified enhanced oil or natural gas recovery project, and

''(D) has not been the basis for a credit received under section 45Q.

''(5) QUALIFIED HYDROGEN.—The term 'qualified hydrogen' means hydrogen fuel produced with less than 17.5 pounds of carbon dioxide emissions per million Btu of gross fuel heating value.''.

(b) PART OF GENERAL BUSINESS CREDIT.—Section 38(B) of such Code is amended by striking ''plus'' at the

end of paragraph (32), by striking the period at the end of paragraph (33) and inserting ", plus", and by adding at the end the following new paragraph:

"(34) the carbon capture production credit under section 45U(a).".

(c) CLERICAL AMENDMENT.—The table of sections for subpart D of part IV of subchapter A of chapter 1 is amended by adding at the end the following new item:

"Sec. 45U. Electricity produced using carbon capture utilization and storage technology.".

(d) EFFECTIVE DATE.—The amendments made by this section shall apply with respect to electricity sold and produced after the date of the enactment of this Act.

**SEC. 136. ELECTIVE PAYMENT OF CREDIT.**

(a) Subchapter B of chapter 65 of the Internal Revenue Code is amended by adding at the end the following new section:

**"SEC. 6431. ELECTIVE PAYMENT OF CREDITS RELATING TO CARBON OXIDE SEQUESTRATION.**

"(a) ELECTION.—In the case of a taxpayer making an election (at such time and in such manner as the Secretary may provide) under this section with respect to any portion of an applicable credit, such taxpayer shall be treated as making a payment against the tax imposed by subtitle A for the taxable year equal to the amount of such portion.

''(b) DEFINITIONS AND SPECIAL RULES.—For purposes of this section—

''(1) GOVERNMENTAL ENTITIES TREATED AS TAXPAYERS.—In the case of an election under this section—

''(A) any State or local government, or a political subdivision thereof, or

''(B) an Indian Tribal government,

shall be treated as a taxpayer for purposes of this section and determining any applicable credit.

''(2) APPLICABLE CREDIT.—The term 'applicable credit' means each of the following credits that would (without regard to this section) be determined with respect to the taxpayer:

''(A) A carbon oxide sequestration credit under section 45Q.

''(B) A carbon capture production credit under section 45U.

''(3) INDIAN TRIBAL GOVERNMENT.—The term 'Indian Tribal government' shall have the meaning given such term by section 139E.

''(4) TIMING.—The payment described in subsection (a) shall be treated as made on—

''(A) in the case of any government, or political subdivision, to which paragraph (1) ap-

plies and for which no return is required under section 6011 or 6033(a), the later of the date that a return would be due under section 6033(a) if such government or subdivision were described in that section or the date on which such government or subdivision submits a claim for credit or refund (at such time and in such manner as the Secretary shall provide), and

"(B) in any other case, the later of the due date of the return of tax for the taxable year or the date on which such return is filed.

"(5) WAIVER OF SPECIAL RULES.—In the case of an election under this section, the determination of any applicable credit shall be without regard to paragraphs (3) and (4)(A)(i) of section 50(b).

"(c) EXCLUSION FROM GROSS INCOME.—Gross income of the taxpayer shall be determined without regard to this section.

"(d) DENIAL OF DOUBLE BENEFIT.—Solely for purposes of section 38, in the case of a taxpayer making an election under this section, the applicable credit shall be reduced by the amount of the portion of such credit with respect to which the taxpayer makes such election.".

(b) CLERICAL AMENDMENT.—The table of sections for subchapter B of chapter 65 is amended by adding at the end the following new item:

''Sec. 6432. Elective payment of credits related to carbon oxide sequestration.''.

# Subtitle D—Support for Carbon Dioxide Transportation and Sequestration Infrastructure

**SEC. 141. SECURING GEOLOGIC RESERVOIRS FOR CARBON DIOXIDE.**

(a) IN GENERAL.—Subtitle B of title IV of the Energy Policy Act of 2005 (42 U.S.C. 15971 et seq.) is further amended by adding after section 418 (as added by this Act) the following new section:

**''SEC. 419. SECURING GEOLOGIC RESERVOIRS FOR STORAGE OF CARBON DIOXIDE.**

''(a) IN GENERAL.—The Secretary shall establish a program to—

''(1) identify geological formations that are capable of storing, cumulatively, at least 250,000,000 tons of carbon dioxide with a target storage cost of less than $10 per ton;

''(2) assess the cost of developing and operating a carbon dioxide sequestration facility at the geological formations identified under paragraph (1); and

''(3) support the development of such carbon dioxide sequestration facility by providing grants or

other appropriate financial assistance to storage facility developers to—

''(A) secure property rights that are necessary to enable carbon dioxide storage in such geologic formations; and

''(B) obtain necessary permits and approval to enable carbon dioxide storage in such geologic formations.

''(b) GEOGRAPHIC DIVERSITY.—The Secretary shall carry out subsection (a) with the goal of supporting development of carbon dioxide sequestration facilities that are capable of storing significant volumes of carbon dioxide at reasonable cost in each of the regions covered by the regional carbon sequestration partnerships established pursuant to section 963.

''(c) APPLICATION.—An entity seeking a grant or other appropriate financial assistance provided under this section shall submit to the Secretary an application at such time and in such manner as the Secretary may require.

''(d) COST SHARING.—The Secretary shall consider the activities described under subsection (a)(3) to be subject to the cost share requirement for demonstration and commercial application activities under section 988(c).''.

(b) TABLE OF CONTENTS AMENDMENT.—The table of contents for the Energy Policy Act of 2005 is further amended by adding after the item relating to section 418 (as added by this Act) the following:

''Sec. 419. Securing geologic reservoirs for storage of carbon dioxide.''.

**SEC. 142. FINANCIAL ASSISTANCE FOR CARBON DIOXIDE SEQUESTRATION INFRASTRUCTURE DEVELOPMENT.**

(a) IN GENERAL.—Subtitle B of title IV of the Energy Policy Act of 2005 (42 U.S.C. 15971 et seq.) is further amended by adding after section 419 (as added by this Act) the following new section:

**''SEC. 420. CARBON DIOXIDE SEQUESTRATION INFRASTRUCTURE DEVELOPMENT.**

''(a) IN GENERAL.—The Secretary shall establish a program to provide grants to support—

''(1) the development of carbon dioxide pipeline infrastructure that is necessary to support the transportation of the volumes of carbon dioxide that are expected to be captured at electricity generation facilities to appropriate sites for long term sequestration, giving priority to pipeline projects of significant length and significant throughput capacity; and

''(2) the development of geologic sequestration facilities that are necessary to support long-term sequestration of the volumes of carbon dioxide that are

expected to be captured at electricity generation facilities.

''(b) APPLICATION.—Applications for a grant provided under this section shall be submitted at such time and in such manner as the Secretary may require.

''(c) COST SHARING.—The Secretary shall consider support for the development of carbon dioxide pipeline infrastructure or the development of geologic sequestration facility under subsection (a) to be subject to the cost share requirement for demonstration and commercial application activities under section 988(c).

''(d) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Secretary to carry out this section $2,000,000,000 for each of fiscal years 2021 through 2025.''.

(b) TABLE OF CONTENTS AMENDMENT.—The table of contents for the Energy Policy Act of 2005 is further amended by adding after the item relating to section 419 (as added by this Act) the following:

''Sec. 420. Carbon dioxide sequestration infrastructure development.''.

**SEC. 143. GEOLOGIC CARBON DIOXIDE SEQUESTRATION UTILITIES.**

(a) IN GENERAL.—The Secretary, in collaboration with the Secretary of Transportation and the Administrator of the Environmental Protection Agency, as appro-

priate, may provide technical assistance to a State that is seeking to—

(1) establish a government-owned carbon dioxide sequestration utility; or

(2) regulate a privately owned carbon dioxide sequestration utility.

(b) TECHNICAL ASSISTANCE.—Technical assistance provided under subsection (a) may include—

(1) with respect to a government-owned carbon dioxide sequestration utility—

(A) conducting engineering studies to support the development of a geologic sequestration facility; and

(B) identifying potential carbon dioxide pipeline routes; and

(2) with respect to State regulation of a privately owned carbon dioxide sequestration utility—

(A) helping with the development of a State permitting system for a privately owned carbon dioxide sequestration utility; and

(B) assisting with the developing regulations for services provided by a privately owned carbon dioxide sequestration utility and the setting of rates charged for such services.

(c) REPORT.—Not later than 1 year of the date of enactment of this section, the Secretary shall submit to Congress a report that—

(1) characterizes Federal, State, and local regulations that apply to carbon dioxide pipeline and sequestration facility development and operation;

(2) identifies any gaps in applicable regulations or standards that need to be addressed to ensure that carbon dioxide pipeline and sequestration facilities are operated in a safe and effective manner;

(3) evaluates whether regulation of the rates or terms of service for carbon dioxide transportation services or geologic sequestration services are necessary to ensure fair access to such services;

(4) evaluates whether eminent domain authority is necessary to enable development of carbon dioxide infrastructure in the public interest; and

(5) provides recommended changes to Federal law that would support the development and use of carbon dioxide pipeline and geologic sequestration facilities in the public interest.

**SEC. 144. COORDINATED FEDERAL PERMITTING FOR CARBON DIOXIDE PIPELINE AND SEQUESTRATION FACILITIES.**

Section 41001(6)(A) of the FAST Act (42 U.S.C. 4370m note(6)(A)) is amended by striking ''pipelines'' and inserting ''pipelines (including pipelines for the transportation of carbon dioxide), facilities for the geologic sequestration of carbon dioxide''.

**SEC. 145. INTERAGENCY TASK FORCE ON CARBON DIOXIDE PIPELINES.**

(a) IN GENERAL.—Not later than 90 days after the date of enactment of this section, the Secretary shall establish an interagency task force (in this section referred to as the ''Task Force'') to assess the potential for a national system of carbon dioxide pipelines.

(b) MEMBERSHIP.—The Task Force shall include representatives from each of the following:

(1) The Department of Energy.

(2) The Department of the Interior.

(3) The Environmental Protection Agency.

(4) The Department of Transportation.

(5) The Federal Energy Regulatory Commission.

(6) State, local, and Tribal governments.

(7) Any other Federal agency that the Secretary determines has a significant interest or role

in development of a national system of carbon dioxide pipelines.

(c) DUTIES.—The Task Force shall—

(1) conduct annual public workshops to discuss the potential of, and progress towards, an accessible and functioning national system of carbon dioxide pipelines;

(2) provide to the public notice of such workshops not less than 60 days before the date on which each such workshop is conducted;

(3) submit to Congress annual reports that summarize the activities and progress of the Task Force; and

(4) as soon as practical, but not later than 5 years after the date on which the Task Force is established, submit to Congress a report that provides a plan to establish a national carbon dioxide pipeline system, which shall include—

(A) information and recommendations related to engineering, building, siting, constructing, and maintaining a national carbon dioxide pipeline system;

(B) recommendations for how to streamline the permitting process for new carbon dioxide pipelines;

(C) information on how to integrate new carbon dioxide pipelines into existing carbon dioxide pipeline infrastructure;

(D) a determination on whether incentives or other policies are needed to encourage the utilization of the advanced leak detection and mitigation technology and monitoring capabilities for the national carbon dioxide pipeline system;

(E) recommendations for how to regulate the national carbon dioxide pipeline system to ensure safety and mitigate environmental impacts; and

(F) an identification of other Federal and State policy challenges related to the development of a national system of carbon dioxide pipelines.

(d) SUNSET.—This section shall cease to be effective on the date that is 5 years after the date on which the Task Force is established.

# TITLE II—INNOVATION IN RENEWABLE ENERGY, ENERGY EFFICIENCY, AND STORAGE

## SEC. 201. ESTABLISHMENT OF TECHNOLOGY PERFORMANCE AND COST TARGETS.

(a) IN GENERAL.—Not later than one year after the date of enactment of this section, the Secretary shall establish technology performance and cost targets for three 5-year periods to address existing gaps in technology, with the first such period starting on the date of enactment of this section and the last such period ending on the date that is 15 years following enactment.

(b) TARGETS.—Technology and performance cost targets shall be established for each of the following technology categories:

(1) Advanced renewable power technologies, which include—

(A) large-scale, novel renewable power plants;

(B) renewable hydrogen power plants, including plants for which the hydrogen comes from renewable natural gas or biogas;

(C) on-shore or off-shore wind power;

(D) thermal or photovoltaic solar power;

(E) hydropower;

(F) geothermal power;

(G) biomass power; and

(H) advanced renewable energy manufacturing techniques.

(2) Mechanical, chemical, and thermal energy storage technologies, which include—

(A) advanced grid-scale energy storage technologies with storage durations in the range of 10 to 50 hours; and

(B) grid-scale energy storage projects that can economically balance electricity supply and demand across seasons.

(3) Electricity transmission technologies, which include underground high-voltage direct current electricity transmission.

(4) Commercial, industrial, and residential energy efficiency technologies, which include—

(A) retrofit packages that reduce the energy used by an average single-family home by at least 50 percent at a cost of no more than $25,000 per such home;

(B) smart heating, ventilation, and air conditioning control technologies that—

(i) can be used in commercial buildings that have between 5,000 and 30,000 square feet of floor area;

(ii) can reduce heating, ventilation, and air conditioning energy consumption by an average of at least 20 percent compared to average commercial buildings;

(iii) yield energy cost savings that can provide at least a 50-percent annual return on the original investment; and

(iv) may include a cloud-based information technology;

(C) those technologies that the Secretary identifies as having the ability to improve energy efficiency or reduce emissions in heavy industries, which include those that produce or refine aluminum, steel, cement, oil, or fertilizer; and

(D) flexible load technology improvements to reduce peak demand.

(5) Industrial process and building electrification technologies, which include—

(A) heat pump space heaters;

(B) heat pump water heaters;

(C) induction stoves; and

(D) advanced industrial process heat technologies.

(c) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to carry out this section the following:

(1) With respect to the advanced renewable energy technologies projects described in subparagraph (b)(1), $2,000,000,000 for each of fiscal years 2021 through 2025.

(2) With respect to the energy storage technologies projects described in subparagraph (b)(2), $400,000,000 for each of fiscal years 2021 through 2025.

(3) With respect to the transmission technologies and projects described in subparagraph (b)(3), $600,000,000 for each of fiscal years 2021 through 2025.

**SEC. 202. ADVANCED INNOVATION AND COMMERCIALIZATION PROGRAM.**

(a) IN GENERAL.—The Secretary, in collaboration with the National Laboratories, other Federal agencies, and private sector and university partners as the Secretary determines necessary, shall establish a program, to be known as the ''Advanced Innovation and Commercialization Program'', to carry out research, development, and

demonstration of technology that meets the targets established for those technologies identified in section 201(b).

(b) EARLY DEPLOYMENT.—

(1) IN GENERAL.—The Secretary shall establish a program to provide grants for early deployment of the technologies demonstrated under the Advanced Innovation and Commercialization program under this section.

(2) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated to carry out this subsection $3,000,000,000 for each of fiscal years 2021 through 2025.

(c) FEDERAL PROCUREMENT.—

(1) IN GENERAL.—The Secretary, in collaboration with the Secretary of Defense and the Administrator of the General Services Administration, shall establish Federal procurement goals and deadlines for achieving such goals for those technologies identified in section 201(b)(1) through (5).

(2) FEDERAL ENERGY AND ADVANCED TECHNOLOGY ENERGY PROCUREMENT.—The Secretary, in collaboration with the Secretary of Defense and the Administrator of General Services, shall—

(A) through administrative and regulatory actions, improve Federal procurement of the technologies described in paragraph (1);

(B) identify and report on barriers to improving Federal procurement of energy and technologies that require legislative changes; and

(C) take due regard of the recommendations from the 2016 report entitled ''Secretary of Energy Advisory Board Report of the Task Force on Federal Energy Management''.

**SEC. 203. UPDATING MOBILE HOMES.**

(a) UPDATING MOBILE HOMES.—Not later than one year after the date of enactment of this section, the Secretary shall establish a program to provide grants and technical assistance to individuals or businesses to facilitate the replacement of energy-inefficient mobile homes with highly efficient zero-energy modular homes.

(b) AUTHORIZATION.—There are authorized to be appropriated to carry out this section $2,500,000,000 for each of fiscal years 2021 through 2025, to remain available until expended.

**SEC. 204. INVESTMENT TAX CREDITS FOR ENERGY BATTERY STORAGE, OFFSHORE WIND, AND CERTAIN HYDROPOWER TECHNOLOGIES.**

(a) IN GENERAL.—Section 48(a)(3)(A) of the Internal Revenue Code of 1986, as amended by section 121, is amended by striking ''or'' at the end of clause (vii), and by adding at the end the following new clauses:

''(ix) equipment which generates wind energy from an offshore facility,

''(x) energy storage equipment,

''(xi) equipment which makes a non-hydroelectric dam capable of generating hydropower, or

''(xii) equipment which generates geothermal electricity through an enhanced geothermal system.''.

(b) ALLOWANCE OF 30 PERCENT CREDIT.—

(1) IN GENERAL.—Section 48(a)(2)(A)(i)(II) of the Internal Revenue Code of 1986 is amended by striking ''paragraph (3)(A)(i)'' and inserting ''clause (i), (ix), (x), (xi), or (xii) of paragraph (3)(A)''.

(2) PHASEOUT.—Section 48(a)(6) of such Code is amended—

(A) by striking ''solar energy'' in the heading and inserting ''certain'', and

(B) by striking ''paragraph (3)(A)(i)'' both places it appears and inserting ''clause (i), (ix), (x), (xi), or (xii) of paragraph (3)(A)''.

(c) DEFINITIONS.—

(1) ENERGY CREDIT.—Section 48(c) of the Internal Revenue Code of 1986 is amended by adding at the end the following new paragraphs:

''(5) QUALIFIED OFFSHORE WIND PROPERTY.—

''(A) IN GENERAL.—The term 'qualified offshore wind property' means an offshore facility using wind to produce electricity.

''(B) OFFSHORE FACILITY.—The term 'offshore facility' means any facility located in the inland navigable waters of the United States, including the Great Lakes, or in the coastal waters of the United States, including the territorial seas of the United States, the exclusive economic zone of the United States, and the outer Continental Shelf of the United States.

''(6) ENERGY STORAGE EQUIPMENT.—The term 'energy storage equipment' means equipment which receives, stores, and delivers energy using batteries, compressed air, pumped hydropower, hydrogen storage (including hydrolysis and electrolysis), thermal

energy storage, regenerative fuel cells, flywheels, capacitors, superconducting magnets, or other technologies identified by the Secretary in consultation with the Secretary of Energy, and which has a capacity of not less than 5 Kilowatt hours.

''(7) NONHYDROELECTRIC DAM.—The term 'nonhydroelectric dam' means a nonhydroelectric dam that—

''(A) is licensed by the Federal Energy Regulatory Commission and meets all other applicable environmental, licensing, and regulatory requirements,

''(B) was placed in service before the date of the enactment of this paragraph and operated for flood control, navigation, or water supply purposes and did not produce hydroelectric power on the date of the enactment of this paragraph,

''(C) is operated so that the water surface elevation at any given location and time that would have occurred in the absence of the hydroelectric project is maintained, subject to any license requirements imposed under applicable law that change the water surface elevation for

the purpose of improving environmental quality of the affected waterway, and

''(D) includes one more hydroelectric projects which have been certified by the Secretary, after consultation with the Federal Energy Regulatory Commission, as meeting the requirements of clause (iii).

''(8) ENHANCED GEOTHERMAL SYSTEM.—The term 'enhanced geothermal system' means a system to extract heat by creating a subsurface fracture system to which water can be added through injection wells.''.

(2) QUALIFYING ADVANCED ENERGY PROJECT CREDIT.—Section 48C(c)(1)(A)(i)(IV) of the Internal Revenue Code of 1986 is amended by inserting '', including through direct air capture or carbon dioxide removal'' after ''emissions''.

(d) EFFECTIVE DATE.—The amendments made by this section shall apply to property placed in service after December 31, 2019.

(e) COORDINATION WITH FEDERAL POWER ACT.—Nothing in this section, or the amendments made by this section, shall affect the standards under which the Federal Energy Regulatory Commission issues licenses for and

regulates hydropower projects under part I of the Federal Power Act.

**SEC. 205. EXTENSION OF PRODUCTION TAX CREDIT FOR SOLAR AND ON-SHORE WIND.**

(a) WIND.—Section 45(d)(1) of the Internal Revenue Code of 1986 is amended by striking ''January 1, 2021'' and inserting ''January 1, 2031''.

(b) SOLAR.—Section 45(d)(4)(A) of such Code is amended by striking ''placed in service before January 1, 2006'' and inserting ''construction of which begins before January 1, 2031''.

(c) APPLICATION OF PHASEOUT PERCENTAGE TO WIND FACILITIES.—Section 45(b)(5)(D) of such Code is amended by striking ''January 1, 2021'' and inserting ''January 1, 2031''.

(d) EFFECTIVE DATE.—The amendments made by this section shall apply to facilities the construction of which begins after December 31, 2020.

**SEC. 206. RENEWAL OF QUALIFYING ADVANCED ENERGY PROJECT CREDIT.**

(a) IN GENERAL.—Section 48C(d)(2)(A) of the Internal Revenue Code of 1986 is amended by striking ''during the 2-year period beginning on the date the Secretary establishes the program under paragraph (1)''.

(b) EFFECTIVE DATE.—The amendment made by this section shall apply to applications received after the date of the enactment of this Act.

**SEC. 207. PERFORMANCE-BASED TAX CREDITS FOR COMMERCIAL AND RESIDENTIAL BUILDINGS.**

(a) The Internal Revenue Code of 1986 is amended by inserting the following after section 45U (as added by this Act):

**"SEC. 45V. DEEP ENERGY RETROFITS AND ZERO-ENERGY COMMERCIAL AND RESIDENTIAL BUILDINGS.**

''(a) DEFINITIONS.—In this section:

''(1) BTU.—The term 'Btu' means British Thermal Unit.

''(2) BUILDING ENERGY.—The term 'building energy' means energy consumed at the building site as measured at the site boundary, which includes heating, cooling, ventilation, domestic hot water, indoor and outdoor lighting, plug loads, process energy, elevators and conveying systems, and intrabuilding transportation systems.

''(3) DEEP ENERGY RETROFIT.—The term 'deep energy retrofit' means a project that uses energy efficiency measures and renewable energy resources to reduce the energy use of an existing building by at least 50 percent on an annual basis

relative to the most recent 12-month period in which the building was fully occupied prior to the project, provided that energy efficiency measures must account for at least 80 percent of the reduction in energy use.

''(4) DELIVERED ENERGY.—The term 'delivered energy' means any type of energy that could be bought or sold as building energy, including electricity, steam, hot or chilled water, natural gas, biogas, landfill gas, coal, coke, propane, petroleum and its derivatives, residual fuel oil, alcohol-based fuels, wood, biomass, and any other material consumed as fuel.

''(5) EXPORTED ENERGY.—The term 'exported energy' means on-site renewable energy supplied through the site boundary and used outside the site boundary.

''(6) HIGH RISE COMMERCIAL BUILDING.—The term 'high rise commercial building' means a commercial building of four or more above grade stories.

''(7) HIGH RISE RESIDENTIAL BUILDING.—The term 'high rise residential building' means a multifamily building with four or more above grade stories.

''(8) kWH.—The term 'kWh' means Kilowatt Hour.

''(9) LOW RISE RESIDENTIAL BUILDING.—The term 'low rise residential building' means a single-family home or multifamily building with no more than three above grade stories.

''(10) ON-SITE RENEWABLE ENERGY.—The term 'on-site renewable energy' means any renewable energy collected and generated within the site boundary that is used for building energy, and the excess renewable energy exported outside the site boundary, provided that any renewable energy certificates associated with the on-site renewable energy must be retained or retired by the building owner or lessee to be claimed as on-site renewable energy.

''(11) RENEWABLE ENERGY.—The term 'renewable energy' means energy generated by biomass, hydro, geothermal, solar, wind, ocean thermal, wave action, or tidal action resources.

''(12) RENEWABLE ENERGY CERTIFICATE.—The term 'renewable energy certificate' means a certificate or credit that represents and conveys the environmental, social, or other nonpower qualities of one megawatt hour of renewable energy, and can be sold separately from the underlying physical elec-

tricity associated with the renewable energy resource.

''(13) SITE BOUNDARY.—The term 'site boundary' means the limits of the building site across which delivered energy and exported energy are measured.

''(14) SOURCE ENERGY.—The term 'source energy' means building energy plus the energy losses in thermal combustion in electricity generation resources; and energy losses in transmission and distribution to the building site.

''(15) ZERO-ENERGY BUILDING.—The term 'zero-energy building' means a building for which, on a source energy basis, the actual annual delivered energy is less than or equal to the on-site renewable exported energy, provided that energy purchased from off-site and renewable energy generated on-site and then sold off-site shall be valued at 6000 Btu/kWh.

''(16) ZERO-ENERGY-READY BUILDING.—The term 'zero-energy-ready building' means a building that—

''(A) if it is a commercial building or high rise residential building—

''(i) is in compliance with Standard 90.1–2019 published by the American Society of Heating, Refrigerating and Air-Conditioning Engineers;

''(ii) is in compliance with Appendix CA (Solar-Ready Zone) of the 2021 International Energy Conservation Code; and

''(iii) demonstrates that its energy consumption is at least 30 percent below the maximum permitted under American Society of Heating, Refrigerating and Air-Conditioning Engineers Standard 90.1–2019, as calculated using the methodology in Appendix G of such standard; and

''(B) if it is a low rise residential building—

''(i) has an Energy Rating Index of 40 or less as calculated using the procedures in Chapter 3 of the residential section of the 2012 International Energy Conservation Code but excluding any renewable energy resources in the calculation, provided that certification of compliance with the Energy Rating Index requirement shall be made by a registered

architect or engineer by another professional authorized by the Secretary of Energy by rule;

''(ii) is in compliance with Appendix RA (Solar-Ready Zone) of the 2021 International Energy Conservation Code; and

''(iii) is certified under—

''(I) the Zero Energy Ready Homes program administered by the Department of Energy; or

''(II) the Passive House specifications of the Passive Institute US or the International Passive House Institute.

''(b) ELIGIBILITY FOR TAX CREDIT.—To be eligible to receive a tax credit under this section, the builder or owner of a building must demonstrate that—

''(1) the building is located in the United States;

''(2) the building is at least 50 percent occupied when the tax credit is claimed;

''(3) if the building has implemented a deep energy retrofit, the project has been completed and certified as a deep energy retrofit by a registered ar-

chitect or engineer, or by another professional authorized by the Secretary of Energy by rule; and

''(4) if the building is a zero-energy building, the building has been zero-energy over a span of 12 continuous months with at least 50 percent occupancy as verified—

''(A) through certification by the Living Buildings Institute Zero Energy Certification Program;

''(B) through certification by the LEED Zero Energy Certification Program Verification; or

''(C) by another professional authorized by the Secretary of Energy by rule.

''(c) TAX CREDIT AMOUNTS.—

''(1) ZERO-ENERGY-READY BUILDINGS.—The following tax credit amounts shall be awarded for certified zero-energy-ready buildings—

''(A) for a residential building with no more than four dwelling units, $5,000 per dwelling unit;

''(B) for a residential building with five or more dwelling units, $3,500 per dwelling unit; and

''(C) for a commercial building, $3 per square foot of floor area.

''(2) ZERO-ENERGY BUILDINGS.—The following tax credit amounts shall be awarded for certified zero-energy buildings—

''(A) for a residential building with no more than four dwelling units, $5,000 per dwelling unit;

''(B) for a residential building with five or more dwelling units, $3,500 per dwelling unit; and

''(C) for a commercial building that is a zero-energy building for a period of 12 continuous months starting after the building is at least 50 percent occupied, $3 per square foot of floor area, provided that a zero-energy building may also receive the zero-energy-ready building incentive if it meets the criteria for this incentive.

''(3) DEEP ENERGY RETROFITS.—The following tax credit amounts shall be awarded to buildings upon completion of a deep energy retrofit—

''(A) for a residential building, $10,000 per dwelling unit, up to a maximum of $1,000,000 per building; and

''(B) for a commercial building, $25 per square foot of floor area, up to a maximum of $2,000,000 per building.

''(d) TAX CREDIT RECIPIENT.—

''(1) IN GENERAL.—The person eligible to receive a tax credit under this section shall be—

''(A) for a new residential building, the builder;

''(B) for an existing residential building that has undergone a deep energy retrofit, the builder;

''(C) for a new commercial building, the building owner; and

''(D) for an existing commercial building that has undergone a deep energy retrofit, the building owner.

''(2) TRANSFER OF CREDIT.—A building owner who is eligible to receive a tax credit under subparagraphs (C) and (D) of paragraph (1) may transfer such tax credit to the architect, builder, or contractor.

''(e) EXCLUSIONS.—A building project is not eligible for tax credits under this section if the owner or builder has used another Federal tax incentive for the same

project, including incentives under sections 25C, 25D, and 179D of this title.

''(f) SUNSET OF TAX CREDIT AUTHORITY.—The tax credit authority under this section shall terminate—

''(1) for zero-energy and zero-energy-ready residential buildings, one year after the Secretary of Energy determines by rule that such buildings accounted for at least 20 percent of new residential buildings in the most recent calendar year;

''(2) for zero-energy and zero-energy-ready commercial buildings, one year after the Secretary of Energy determines by rule that such buildings accounted for at least 20 percent of new commercial building construction in the most recent calendar year;

''(3) for deep energy retrofits to residential buildings, one year after the Secretary of Energy determines by rule that at least 10 percent of units at residential buildings have undergone such retrofits; and

''(4) for deep energy retrofits to commercial buildings, one year after the Secretary of Energy determines by rule that at least 10 percent of the floor area of commercial buildings has undergone such retrofits.

''(g) RULEMAKING.—Not later than one year after enactment of this section, the Secretary, in coordination with the Secretary of Energy, shall promulgate rules to implement this section.

''(h) REPORT TO CONGRESS.—Not later than two years after enactment of this section, and each calendar year thereafter, the Secretary shall report to Congress on the use of tax credits under this section broken down by the categories in subsection (c), which report shall include—

''(1) the dollar value of tax credits awarded to date and in the prior calendar year; and

''(2) the number of units at residential buildings and the number of square feet of floor area in commercial buildings for which tax credits were awarded to date and in the prior year calendar year.''.

(b) TABLE OF CONTENTS.—The table of contents of the Internal Revenue Code of 1986 is further amended by inserting after the item relating to section 45U (as added by this Act) the following:

''Sec. 45V. Deep energy retrofits and zero-energy commercial and residential buildings.''.

**SEC. 208. EXTENSION OF PUBLICLY TRADED PARTNERSHIP OWNERSHIP STRUCTURE TO RENEWABLE ENERGY PROJECTS.**

(a) IN GENERAL.—Section 7704(d)(1)(E) of the Internal Revenue Code of 1986, as amended by section 134 of this Act, is further amended by adding after clause (v) the following:

''(vi) The generation of electric power (including the leasing of tangible personal property used for such generation) exclusively utilizing any resource described in section 45(c)(1) or energy property described in section 48 (determined without regard to any termination date) or, in the case of a facility described in paragraph (3) or (7) of section 45(d) (determined without regard to any placed in service date or date by which construction of the facility is required to begin), the accepting or processing of such resource.

''(vii) The sale of electric power, capacity, resource adequacy, demand response capabilities, or ancillary services that is produced or made available from any equipment or facility (operating as a

single unit or as an aggregation of units) the principal function of which is to—

"(I) use mechanical, chemical, electrochemical, hydroelectric, or thermal processes to store energy that was generated at one time for conversion to electricity at a later time, or

"(II) store thermal energy for direct use for heating or cooling at a later time in a manner that avoids the need to use electricity at that later time.

"(viii) The generation, storage, or distribution of thermal energy exclusively utilizing property described in section 48(c)(3) (determined without regard to subparagraphs (B) and (D) thereof and without regard to any placed in service date).

"(ix) The generation, storage, or distribution of thermal energy exclusively using any resource described in section 45(c)(1) or energy property described in clause (i) or (iii) of section 48(a)(3)(A).

"(x) The use of recoverable waste energy, as defined in section 371(5) of the Energy Policy and Conservation Act (42 U.S.C. 6341(5))."

(b) EFFECTIVE DATE.—The amendment made by this section shall apply to taxable years beginning after December 31, 2020.

**SEC. 209. MANUFACTURER CREDIT FOR HIGH-EFFICIENCY HEAT PUMPS AND HEAT PUMP WATER HEATERS.**

(a) IN GENERAL.—The Internal Revenue Code of 1986 is further amended by adding after section 45V (as added by this Act) the following new section:

**"SEC. 45W. MANUFACTURER CREDIT FOR HIGH-EFFICIENCY HEAT PUMPS AND HEAT PUMP WATER HEATERS.**

"(a) CREDIT AMOUNTS.—

"(1) IN GENERAL.—For purposes of section 38, the energy efficient heat pump credit determined under this section for any taxable year is an amount equal to the sum of the credit amounts determined under paragraph (2) for each type of qualified energy efficient heat pump produced by the taxpayer during the calendar year ending with or within the taxable year.

''(2) CALCULATION OF CREDITS.—The credit amount determined for any type of qualified energy efficient appliance is—

''(A) the applicable amount determined under subsection (b) with respect to such type, multiplied by

''(B) the eligible production for such type under subsection (c).

''(b) APPLICABLE AMOUNT.—For purposes of subsection (a):

''(1) CONSUMER HEAT PUMP WATER HEATERS.—The applicable amount is $600 in the case of a consumer heat pump water heater that is manufactured in calendar years 2022 through 2030 and that has a Uniform Energy Factor of 3.3 or more for electric water heaters and 1.3 or more for gas water heaters.

''(2) COMMERCIAL HEAT PUMP WATER HEATERS.—The applicable amount is $600 in the case of a commercial heat pump water heater manufactured in calendar years 2022 through 2030 and that has a Coefficient of Performance of 3.0 or more for electric water heaters and 1.3 or more for gas water heaters.

"(3) CONSUMER UNITARY HEAT PUMPS.—The applicable amount is $800 in the case of a consumer unitary heat pump that—

"(A) is manufactured in calendar years 2022 through 2030,

"(B) in the case of an electric heat pump meets either—

"(i) the most recent requirements of the Energy Star Most Efficient Specification promulgated by the United States Environmental Protection Agency before the date of enactment of this section, or

"(ii) the most recent Cold Climate Air-Source Heat Pump Specification promulgated by Northeast Energy Efficiency Partnerships before the date of enactment of this section, and

"(C) in the case of a gas heat pump, has an Annual Fuel Utilization Efficiency of 140 percent or more.

"(4) COMMERCIAL HEAT PUMPS.—The applicable amount is $24 per thousand British Thermal Units of heating capacity measured at a 17 degree Fahrenheit ambient temperature in the case of a commercial heat pump that is manufactured in cal-

endar years 2022 through 2030 and that has a Coefficient of Performance of 2.3 or more at a 17 degree F ambient temperature for electric heat pumps, and 1.2 or more at a 17 degree F ambient temperature for gas heat pumps.

''(5) INDUSTRIAL HEAT PUMPS.—The applicable amount is $36 per thousand British Thermal Units of heating capacity for heat pumps with a heating capacity of 2,400 thousand British Thermal Units or less and $18 per thousand British Thermal Units of heating capacity for heat pumps with a heating capacity above 2,400 thousand British Thermal Units in the case of an industrial heat pump that is manufactured and installed in an industrial facility in calendar years 2022 through 2030 and that has a Coefficient of Performance of 2.0 or more.

''(c) ELIGIBLE PRODUCTION.—The eligible production in a calendar year with respect to each type of energy efficient heat pump is—

''(1) the number of heat pumps of such type that are produced by the taxpayer in the United States during such calendar year, less

''(2) the average number of heat pumps of such type that were produced by the taxpayer (or any

predecessor) in the United States during the preceding 2-calendar year period.

''(d) TYPES OF ENERGY EFFICIENT HEAT PUMPS.—For purposes of this section, the types of energy efficient heat pumps are—

''(1) consumer heat pump water heaters described in subsection (b)(1),

''(2) commercial heat pump water heaters described in subsection (b)(2),

''(3) consumer unitary heat pumps described in subsection (b)(3),

''(4) commercial heat pumps described in subsection (b)(4), and

''(5) industrial heat pumps described in subsection (b)(5).

''(e) LIMITATIONS.—

''(1) AGGREGATE CREDIT AMOUNT ALLOWED.—The aggregate amount of credit allowed under subsection (a) with respect to a taxpayer for any taxable year shall not exceed $250,000,000, reduced by the amount of the credit allowed under subsection (a) to the taxpayer (or any predecessor) for all prior taxable years beginning after December 31, 2021.

''(2) LIMITATION BASED ON GROSS RECEIPTS.—The credit allowed under subsection (a)

with respect to a taxpayer for the taxable year shall not exceed an amount equal to 4 percent of the average annual gross receipts of the taxpayer for the 3 taxable years preceding the taxable year in which the credit is determined.

''(3) GROSS RECEIPTS.—For purposes of this subsection, the rules of paragraphs (2) and (3) of section 448(c) shall apply.

''(f) ADJUSTMENT OF ENERGY EFFICIENCY CRITERIA.—No later than December 31, 2022, and every two years thereafter, the Secretary, in consultation with the Secretary of Energy, shall review the efficiency levels in section (b) and revise these levels upward if necessary to include only the most efficient commercially available heat pumps of each type, while ensuring that at least three manufacturers are represented in each type across a range of product heating capacities.

''(g) TEST PROCEDURES.—

''(1) The Department of Energy shall develop test procedures to determine Coefficient of Performance for—

''(A) gas commercial heat pump water heaters,

''(B) gas commercial heat pumps, and

''(C) industrial heat pumps.

''(2) Such test procedures shall build upon the foundation of relevant current American National Standard Institute and International Organization of Standard test procedures.

''(h) DEFINITIONS.—For purposes of this section:

''(1) QUALIFIED ENERGY EFFICIENT HEAT PUMP.—The term 'qualified energy efficient heat pump' means—

''(A) any consumer heat pump water heater described in subsection (b)(1),

''(B) any commercial heat pump water heater described in subsection (b)(2),

''(C) any consumer unitary heat pump described in subsection (b)(3),

''(D) any commercial heat pump described in subsection (b)(4), and

''(E) any industrial heat pump described in subsection (b)(5).

''(2) CONSUMER HEAT PUMP WATER HEATER.—The term 'consumer heat pump water heater' means a water heater that uses a heat pump to heat water and has an electric input of 12 Kilowatt or less or a gas input of 75,000 British Thermal Units per hour or less, measured in accordance with applicable Department of Energy test procedures.

''(3) COMMERCIAL HEAT PUMP WATER HEATERS.—The term 'commercial heat pump water heater' means a water heater that uses a heat pump to heat water and has an electric input of more than 12 Kilowatt or a gas input of more than 75,000 British Thermal Units per hour, measured in accordance with applicable Department of Energy test procedures.

''(4) CONSUMER UNITARY HEAT PUMP.—The term 'consumer unitary heat pump' means a heat pump designed to provide space heating and cooling with a cooling capacity of 65,000 British Thermal Units per hour or less, measured in accordance with the applicable Department of Energy test procedures.

''(5) COMMERCIAL HEAT PUMP.—The term 'commercial heat pump' means a heat pump designed to provide space heating and cooling with a cooling capacity of more than 65,000 British Thermal Units per hour, measured in accordance with the applicable Department of Energy test procedures.

''(6) INDUSTRIAL HEAT PUMP.—The term 'industrial heat pump' means a heat pump that upgrades industrial waste heat to a higher temperature

such that the delivered heat is produced and supplied to the facility more efficiently than conventional heating methods, such as a steam or electric resistance boiler.

''(7) PRODUCED.—The term 'produced' includes manufactured.

''(8) UNIFORM ENERGY FACTOR.—The term 'Uniform Energy Factor' is a metric used to measure the efficiency of consumer water heaters, with details specified in applicable Department of Energy test procedures.

''(9) COEFFICIENT OF PERFORMANCE.—The term 'Coefficient of Performance' means the ratio of heat output to energy input, with details specified in applicable Department of Energy test procedures. For gas commercial heat pump water heaters, until there is a Department of Energy test procedure, American National Standards Institute and American Society of Heating, Refrigerating and Air-Conditioning Engineers Standard 118.1 shall be used. For gas commercial heat pumps, until there is a Department of Energy test procedure, American National Standards Standard Z21.40.4 shall be used. For industrial heat pumps, until there is a Department of Energy test procedure, manufacturers may

use their own tests, provided they publicly post the test conditions and assumptions they used in developing their stated Coefficient of Performance values.

''(i) SPECIAL RULES.—For purposes of this section:

''(1) IN GENERAL.—Rules similar to the rules of subsections (c), (d), and (e) of section 52 shall apply.

''(2) CONTROLLED GROUP.—

''(A) IN GENERAL.—All persons treated as a single employer under subsection (a) or (b) of section 52 or subsection (m) or (o) of section 414 shall be treated as a single producer.

''(B) INCLUSION OF FOREIGN CORPORATIONS.—For purposes of subparagraph (A), in applying subsections (a) and (b) of section 52 to this section, section 1563 shall be applied without regard to subsection (b)(2)(C) thereof.

''(3) VERIFICATION.—No amount shall be allowed as a credit under subsection (a) with respect to which the taxpayer has not submitted such information or certification as the Secretary, in consultation with the Secretary of Energy, determines necessary.

''(4) PRODUCTION IN UNITED STATES.—The requirement for production in the United States in

section (c) does not take effect until January 1, 2024.''.

(b) CLERICAL AMENDMENT.—The table of sections for subpart D of part IV of subchapter A of chapter 1 is further amended by adding after the item relating to section 45V the following new item:

''Sec. 45W. Manufacturer credit for high-efficiency heat pumps and heat pump water heaters.''.

**SEC. 210. OTHER AUTHORIZATIONS OF APPROPRIATIONS.**

(a) AMENDMENT TO AMERICA COMPETES ACT.—Section 5012(o)(2) of the America COMPETES Act (42 U.S.C. 16538(o)(2)) is amended—

(1) in subparagraph (D), by striking ''; and'' and inserting '';'';

(2) in subparagraph (E), by striking ''2013.'' and inserting ''2013;''; and

(3) by adding at the end the following:

''(F) $569,000,000 for fiscal year 2021;

''(G) $713,000,000 for fiscal year 2022;

''(H) $856,000,000 for fiscal year 2023; and

''(I) $1,000,000,000 for fiscal year 2024.''.

(b) REGIONAL INNOVATION MODELS.—There are authorized to be appropriated to the Secretary for purposes of developing regional innovation models—

(1) $100,000,000 for fiscal year 2021;

(2) $200,000,000 for fiscal year 2022;

(3) $300,000,000 for fiscal year 2023; and

(4) $500,000,000 for fiscal year 2024.

(c) GRID MODERNIZATION.—There are authorized to be appropriated to the Secretary for purposes of research, development, demonstration, analysis, technology validation, market transformation, and technical assistance to support grid modernization—

(1) $238,000,000 for fiscal year 2021;

(2) $375,000,000 for fiscal year 2022;

(3) $513,000,000 for fiscal year 2023; and

(4) $650,000,000 for fiscal year 2024.

(d) ADVANCED LAND-BASED AND OFFSHORE WIND POWER.—There are authorized to be appropriated to the Secretary for the purposes of research, development, demonstration, analysis, technology validation, market transformation, and technical assistance to support advanced land-based and offshore wind power—

(1) $178,000,000 for fiscal year 2021;

(2) $252,000,000 for fiscal year 2022;

(3) $326,000,000 for fiscal year 2023; and

(4) $400,000,000 for fiscal year 2024.

(e) ADVANCED SOLAR POWER.—There are authorized to be appropriated to the Secretary for the purposes of research, development, demonstration, analysis, tech-

nology validation, market transformation, and technical assistance to support advanced solar power—

(1) $360,000,000 for fiscal year 2021;

(2) $440,000,000 for fiscal year 2022;

(3) $520,000,000 for fiscal year 2023; and

(4) $600,000,000 for fiscal year 2024.

(f) MECHANICAL, CHEMICAL, AND THERMAL STORAGE TECHNOLOGY.—There are authorized to be appropriated to the Secretary for the purposes of research, development, demonstration, analysis, technology validation, market transformation, and technical assistance to support mechanical, chemical, and thermal storage technology—

(1) $150,000,000 for fiscal year 2021;

(2) $150,000,000 for fiscal year 2022;

(3) $150,000,000 for fiscal year 2023; and

(4) $150,000,000 for fiscal year 2024.

(g) BUILDINGS.—There are authorized to be appropriated to the Secretary for the purposes of research, development, demonstration, analysis, technology validation, market transformation, and technical assistance to support technologies that improve the energy efficiency of building equipment, the building envelope, building controls, and that improve information sharing between the building and the grid, which technologies may include en-

ergy efficiency, demand response and electrification technologies in residential, commercial, and industrial buildings—

(1) $381,000,000 for fiscal year 2021;

(2) $478,000,000 for fiscal year 2022;

(3) $574,000,000 for fiscal year 2023; and

(4) $670,000,000 for fiscal year 2024.

(h) INDUSTRY.—There are authorized to be appropriated to the Secretary for the purposes of research, development, demonstration, analysis, technology validation, market transformation, and technical assistance to support technologies to reduce emissions in industrial and manufacturing processes, including such technologies relating to energy efficiency and electrification—

(1) $381,000,000 for fiscal year 2021;

(2) $478,000,000 for fiscal year 2022;

(3) $574,000,000 for fiscal year 2023; and

(4) $840,000,000 for fiscal year 2024.

(i) ENHANCED GEOTHERMAL TECHNOLOGIES.—There are authorized to the Secretary for the purposes of research, development, and demonstration of enhanced geothermal technologies an increase in the amount from fiscal year 2019 appropriations by $100,000,000 for each year until fiscal year 2025, of which—

(1) $70,000,000 is authorized for the Secretary to use each year to establish a supercritical enhanced geothermal system demonstration program; and

(2) $30,000,000 is authorized for the Secretary to use each year in collaboration with the National Laboratories for supercritical enhanced geothermal systems research and development.

# TITLE III—EXISTING AND ADVANCED NUCLEAR POWER PLANTS

**SEC. 301. ZERO-EMISSIONS CREDIT PROGRAM.**

(a) ESTABLISHMENT.—Not later than 2 years after the date of enactment of this section, the Secretary shall establish a program to be known as the ''Zero-Emissions Credit Program''.

(b) ISSUANCE OF CREDITS.—Not later than March 1 of each calendar year beginning after the date on which the Zero-Emissions Credit Program is established, under the Zero-Emissions Credit Program the Secretary shall issue an amount of zero-emissions credits to each owner or operator of a qualified nuclear power plant in the quantity that is equal to the amount of the megawatt hours of electricity sold by such owner or operator to an organized power market in the prior year.

(c) PAYMENT FOR RECEIPT OF CREDITS.—

(1) IN GENERAL.—Except as provided in paragraphs (2), (3), and (4), under the Zero-Emissions Credit Program the Secretary shall pay an owner or operator of a qualified nuclear power plant $13.25 for each zero-emissions credit an owner or operator submits to the Secretary.

(2) ADJUSTMENTS FOR INFLATION.—Each year, the Secretary shall adjust the amount to be paid under the Zero-Emissions Credit Program for each zero-emissions credit to account for the effects of inflation.

(3) REDUCTION IN VALUE OF CREDIT.—If the price for the sale of electricity increases such that payments for zero-emissions credits are no longer needed to prevent the retirement of a qualified nuclear power plant, the Secretary shall reduce the amount to be paid for each zero-emissions credit for such qualifying nuclear power plant in accordance with such change in price.

(4) OFFSET FOR VALUE OF CLEAN ELECTRICITY CREDITS.—The Secretary shall reduce the payment to a qualified nuclear power plant for a zero-emissions credit by the value of any clean electricity credits issued to the plant for the same quan-

tity of megawatt hours pursuant to the Federal Clean Electricity Standard program established under section 611 of the Public Utility Regulatory Policies Act of 1978.

(d) TERMINATION DATE.—The Zero-Emissions Credit Program shall terminate on the date that is 5 years after the program effective date of the Federal Clean Electricity Standard established under section 611 of the Public Utility Regulatory Policies Act of 1978.

(e) DEFINITIONS.—In this section:

(1) ORGANIZED POWER MARKET.—The term ''organized power market'' means any market—

(A) for the wholesale sale of electricity; and

(B) that is controlled by a regional transmission organization or an independent system operator as defined in section 3 of the Federal Power Act (16 U.S.C. 796).

(2) QUALIFIED NUCLEAR POWER PLANT.—

(A) IN GENERAL.—The term ''qualified nuclear power plant'' means any nuclear power plant that the Secretary determines, based on an application submitted by such plant to the Secretary, is not financially viable or will otherwise be required to retire if it does not receive

zero-emissions credits under the Zero-Emissions Credit Program.

(B) EXCLUSION.—The term ''qualified nuclear power plant'' does not include a nuclear power plant that receives a tax credit under section 48 of the Internal Revenue Code of 1986.

(3) ZERO-EMISSIONS CREDIT.—The term ''zero-emissions credit'' means a credit issued by the Secretary under the Zero-Emissions Credit Program that represents 1 megawatt of electricity sold by the owner or operator of a qualified nuclear power plant to an organized power market.

(f) RULEMAKING.—Not later than one year after the date of enactment of this section, the Secretary shall finalize rules for—

(1) the application and decision process for qualified nuclear power plants; and

(2) the schedule and process for issuance of credits and periodic review and adjustment of issuances.

**SEC. 302. INVESTMENT TAX CREDIT FOR NUCLEAR ENERGY PROPERTY.**

(a) IN GENERAL.—Section 48(a)(3)(A) of the Internal Revenue Code of 1986 is amended—

(1) in clause (vi), by striking ''or'';

(2) in clause (vii), by inserting ''or'' at the end; and

(3) by adding at the end the following new clause:

''(viii) qualified nuclear energy property,''.

(b) ELIGIBLE FOR 30-PERCENT CREDIT.—Section 48(a)(2)(A)(i) of such Code is amended by striking ''and'' in subclause (III) and by adding at the end the following new subclause:

''(V) energy property described in paragraph (3)(A)(viii) but only with respect to property placed in service before January 1, 2024, and''.

(c) QUALIFIED NUCLEAR ENERGY PROPERTY.—Section 48(c) of such Code is amended by adding at the end the following new paragraph:

''(5) QUALIFIED NUCLEAR ENERGY PROPERTY.—

''(A) IN GENERAL.—The term 'qualified nuclear energy property' means any amounts paid or incurred for the refueling of, and any other expenditures described in section 263(a) with respect to, a qualifying nuclear power plant.

"(B) QUALIFYING NUCLEAR POWER PLANT.—The term 'qualifying nuclear power plant' means a nuclear power plant which—

"(i) submitted an application for license renewal to the Nuclear Regulatory Commission in accordance with part 54 of title 10, Code of Federal Regulations, before January 1, 2026, or

"(ii) certified to the Secretary (at such time and in such form and in such manner as the Secretary prescribes) that such plant will submit an application for license renewal to the Nuclear Regulatory Commission in accordance with part 54 of title 10, Code of Federal Regulations, before January 1, 2026.

"(C) SPECIAL RULES.—

"(i) BASIS.—For purposes of subsection (a), the cumulative amounts paid or incurred by the taxpayer during the taxable year with respect to a qualifying nuclear power plant, which are properly chargeable to capital account, shall be treated as the basis of the qualified nuclear

energy property placed in service for that taxable year.

''(ii) PLACED IN SERVICE.—For purposes of subsection (a), qualified nuclear energy property shall be treated as having been placed in service on the last day of the taxable year in which the taxpayer pays or incurs such amounts described in clause (i).

''(iii) RECAPTURE.—The Secretary shall, by regulations, provide for recapturing the benefit of any credit allowable under subsection (a) to any qualifying nuclear power plant which made a certification pursuant to subparagraph (B) but does not file an application of license renewal to the Nuclear Regulatory Commission in accordance with part 54 of title 10, Code of Federal Regulations, before January 1, 2026.''.

(d) PHASEOUT OF 30-PERCENT CREDIT RATE FOR NUCLEAR ENERGY PROPERTY.—Section 48(a) of such Code is amended by adding at the end the following new paragraph:

''(7) PHASEOUT FOR QUALIFIED NUCLEAR ENERGY PROPERTY.—In the case of qualified nuclear energy property, the energy percentage determined under paragraph (2) shall be equal to—

''(A) in the case of any property placed in service after December 31, 2023, and before January 1, 2025, 26 percent, and

''(B) in the case of any property placed in service after December 31, 2022, and before January 1, 2026, 22 percent.''.

(e) COORDINATION WITH CREDIT FOR PRODUCTION FROM ADVANCED NUCLEAR POWER FACILITIES.—The last sentence of section 48(a)(3) of such Code is amended by inserting ''or 45J'' after ''section 45''.

(f) TRANSFER OF CREDIT BY CERTAIN PUBLIC ENTITIES.—

(1) IN GENERAL.—Section 48 of such Code is amended by adding at the end the following new subsection:

''(e) SPECIAL RULE FOR QUALIFIED NUCLEAR ENERGY PROPERTY.—

''(1) IN GENERAL.—In the case of any qualified nuclear energy property, if, with respect to a credit under subsection (a) for any taxable year—

''(A) the taxpayer would be a qualified public entity, and

''(B) such entity elects the application of this subsection for such taxable year with respect to all (or any portion specified in such election) of such credit, the eligible project partner specified in such election (and not the qualified public entity) shall be treated as the taxpayer for purposes of this title with respect to such credit (or such portion thereof).

''(2) DEFINITIONS.—For purposes of this subsection:

''(A) QUALIFIED PUBLIC ENTITY.—The term 'qualified public entity' means—

''(i) a Federal, State, or local government entity, or any political subdivision, agency, or instrumentality thereof,

''(ii) a mutual or cooperative electric company described in section 501(c)(12) or section 1381(a)(2), or

''(iii) a not-for-profit electric utility which has or had received a loan or loan guarantee under the Rural Electrification Act of 1936.

"(B) ELIGIBLE PROJECT PARTNER.—The term 'eligible project partner' means—

"(i) any person responsible for operating, maintaining, or repairing the qualifying nuclear power plant to which the credit under subsection (a) relates,

"(ii) any person who participates in the provision of the nuclear steam supply system to the qualifying nuclear power plant to which the credit under subsection (a) relates,

"(iii) any person who participates in the provision of nuclear fuel to the qualifying nuclear power plant to which the credit under subsection (a) relates, or

"(iv) any person who has an ownership interest in such facility.

"(3) SPECIAL RULES.—

"(A) APPLICATION TO PARTNERSHIPS.—In the case of a credit under subsection (a) which is determined with respect to qualified nuclear energy property at the partnership level—

"(i) for purposes of paragraph (1)(A), a qualified public entity shall be treated as

the taxpayer with respect to such entity's distributive share of such credit, and

''(ii) the term 'eligible project partner' shall include any partner of the partnership.

''(B) TAXABLE YEAR IN WHICH CREDIT TAKEN INTO ACCOUNT.—In the case of any credit (or portion thereof) with respect to which an election is made under subsection (e), such credit shall be taken into account in the first taxable year of the eligible project partner ending with, or after, the qualified public entity's taxable year with respect to which the credit was determined.

''(C) TREATMENT OF TRANSFER UNDER PRIVATE USE RULES.—For purposes of section 141(b)(1), any benefit derived by an eligible project partner in connection with an election under this subsection shall not be taken into account as a private business use.''.

(2) SPECIAL RULE FOR PROCEEDS OF TRANSFERS FOR MUTUAL OR COOPERATIVE ELECTRIC COMPANIES.—Section 501(c)(12) of such Code is amended by adding at the end the following new subparagraph:

''(I) In the case of a mutual or cooperative electric company described in this paragraph or an organization described in section 1381(a)(2), income received or accrued in connection with an election under section 48(e) shall be treated as an amount collected from members for the sole purpose of meeting losses and expenses.''.

(g) CONFORMING AMENDMENT.—Section 48(a)(2)(A) of such Code is amended by striking ''paragraph (6)'' and inserting ''paragraphs (6) and (7)''.

(h) EFFECTIVE DATE.—The amendments made by this section shall apply to periods after December 31, 2019, in taxable years ending after such date, under rules similar to the rules of section 48(m) of the Internal Revenue Code of 1986 (as in effect on the day before the enactment of the Revenue Reconciliation Act of 1990).

**SEC. 303. EXPANDING FEDERAL CLEAN ELECTRICITY PURCHASING REQUIREMENTS.**

(a) AMENDMENTS TO THE FEDERAL PURCHASE REQUIREMENTS OF THE ENERGY POLICY ACT OF 2005.—Section 203 of the Energy Policy Act of 2005 (42 U.S.C. 15852) is amended—

(1) in subsection (a), by striking '', the following amounts shall be renewable energy:'' and in-

serting ‘‘, such amount shall be made up of the following:’’;

(2) in subsection (a)(1), by inserting ‘‘shall be renewable energy’’ after ‘‘2009’’;

(3) in subsection (a)(2), by inserting ‘‘shall be renewable energy’’ after ‘‘2012’’;

(4) in subsection (a)(3), by striking ‘‘7.5 percent in fiscal year 2013 and each fiscal year thereafter.’’ and inserting ‘‘7.5 percent in fiscal years 2013 through 2019 shall be renewable energy.’’;

(5) in subsection (a), by adding at the end the following:

‘‘(4) Not less than 35 percent in fiscal year 2020 and each year thereafter shall be clean electricity.’’;

(6) in subsection (b), by adding at the end the following:

‘‘(3) CLEAN ELECTRICITY.—The term ‘clean electricity’ means—

‘‘(A) renewable energy;

‘‘(B) any electric energy generated by a nuclear power plant; and

‘‘(C) the percentage of electric energy generated by a power plant that equals the per-

centage of carbon dioxide emissions of such plant that are captured and sequestered.'';

(7) in subsection (c), by striking ''renewable energy'' and inserting ''clean electricity'' in each place it occurs;

(8) by redesignating subsection (d) as subsection (e); and

(9) by inserting after subsection (c) the following:

''(d) POWER PURCHASE AGREEMENT.—For the purposes of this section, the Secretary may enter into a power purchase agreement for as much as all of the electricity output of a nuclear power plant for the duration of the operational life of such plant if such plant supplies electricity for purposes of national security or mission-critical activities.''.

(b) AMENDMENTS TO ENERGY POLICIES OF THE DEPARTMENT OF DEFENSE AND THE DEPARTMENT OF HOMELAND SECURITY.—Subtitle B of title VI of the Energy Policy Act of 2005 is amended by adding at the end the following:

**''SEC. 639A. LONG-TERM NUCLEAR POWER PURCHASE AGREEMENT PILOT PROGRAM.**

''(a) ESTABLISHMENT.—The Secretary shall establish and carry out a pilot program for long-term power

purchase agreements for electricity generated by nuclear power.

''(b) REQUIREMENTS.—In carrying out the pilot program established under subsection (a), the Secretary shall—

''(1) consult and coordinate with the heads of other Federal agencies that may benefit from purchasing nuclear power for a period of longer than 10 years, including—

''(A) the Secretary of Defense;

''(B) the Administrator of General Services; and

''(C) the Secretary of Homeland Security; and

''(2) not later than 5 years after the date of enactment of this section, enter into at least 1 power purchase agreement with the owner or operator of a commercial nuclear power plant for up to 30 years.

''(c) PRIORITY.—In carrying out the pilot program established under subsection (a), the Secretary shall prioritize entering into a power purchase agreement with the owner or operator of a plant that uses first-of-a-kind or early deployment nuclear technologies that can provide reliable and resilient power to high-value assets for national security purposes or other purposes, which the Sec-

retary determines are in the national interest, especially in remote off-grid scenarios or grid-connected scenarios that can provide capabilities commonly known as 'islanding power capabilities' during an emergency scenario.

''(d) EFFECT ON RATES.—A power purchase agreement entered into under this section may be at a rate that is higher than the average market rate if the power purchase agreement fulfills an applicable consideration described in subsection (c).''.

(c) TABLE OF CONTENTS.—The table of contents of the Energy Policy Act of 2005 (Public Law 109–58; 119 Stat. 594) is amended by inserting after the item relating to section 639 the following:

''Sec. 639A. Long-term nuclear power purchase agreement pilot program.''.

(d) AUTHORIZATION OF LONG-TERM POWER PURCHASE AGREEMENTS.—Section 501(b)(1) of title 40, United States Code, is amended by striking subparagraph (B) and inserting the following:

''(B) PUBLIC UTILITY CONTRACTS.—

''(i) TERM.—

''(I) IN GENERAL.—A contract under this paragraph to purchase electricity service from a public utility may be for a period of not more than 40 years.

''(II) OTHER PUBLIC UTILITY SERVICES.—A contract under this paragraph for a public utility service other than a service described in subclause (I) may be for a period of not more than 10 years.

''(ii) COSTS.—The cost of a contract under this paragraph for any fiscal year may only be paid from the appropriations for that fiscal year.''.

**SEC. 304. MODERNIZING THE NUCLEAR REGULATORY COMMISSION.**

(a) REDUCING THE ADMINISTRATIVE BURDEN OF LICENSING ACTIVITIES FOR NEW DESIGNS OF ADVANCED NUCLEAR REACTORS.—

(1) REPORT.—Not later than 90 days after the date of enactment of this section, the Commission shall submit to the Committee on Energy and Commerce of the House of Representatives and the Committee on Energy and Natural Resources of the Senate a report that recommends how to improve the processes, procedures, and, if appropriate, regulations of the Commission with respect to licensing, certification, and approval of advanced nuclear reactor designs.

(2) REQUIRED RECOMMENDATIONS.—The report submitted under paragraph (1) shall include recommendations to—

(A) improve all Commission actions with respect to licensing, certification, and approval of advanced nuclear reactor designs, including actions to meet the Commission's obligations under the National Environmental Policy Act of 1969 (42 U.S.C. 4231 et seq.);

(B) emphasize risk-informed and performance-based regulatory approaches; and

(C) enable the Commission to finalize its review of an application to approve the design of an advanced nuclear reactor in no more than two years.

(b) STUDY ON ELIMINATION OF FOREIGN LICENSING RESTRICTIONS.—Not later than 18 months after the date of enactment of this section, the Comptroller General, in consultation with the Secretary, shall submit to Congress a report containing the results of a study on the feasibility and implications of repealing restrictions under sections 103 d. and 104 d. of the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.).

(c) STUDY ON THE IMPACT OF THE ELIMINATION OF MANDATORY HEARINGS FOR UNCONTESTED LICENSING

APPLICATIONS.—Not later than 18 months after the date of enactment of this section, the Comptroller General, in consultation with the Secretary, shall submit to Congress a report containing the results of a study on the estimated effect of eliminating the requirement to hold a hearing for uncontested applications for an operating license or construction permit under section 189 of the Atomic Energy Act of 1954 (42 U.S.C. 2239).

(d) INFORMAL HEARING PROCEDURES.—

(1) PROCEDURES.—Section 189 a. of the Atomic Energy Act of 1954 (42 U.S.C. 2239(a)) is amended by adding at the end the following:

''(3) Any hearing under this section shall be conducted using informal adjudicatory procedures in accordance with section 555 of title 5, United States Code, unless the Commission determines that formal adjudicatory procedures under section 554, 556, or 557 of title 5, United States Code are necessary—

''(A) to develop a sufficient record; or

''(B) to achieve fairness.''.

(2) HEARINGS ON LICENSING OF URANIUM ENRICHMENT FACILITIES.—Section 193(b) of the Atomic Energy Act of 1954 (42 U.S.C. 2243(b)) is amended—

(A) in paragraph (1), by striking ''on the record'' and all that follows through ''and 63'' and inserting ''upon a request for a hearing on the licensing of construction and operation of a uranium enrichment facility under sections 53 and 63, the Commission shall conduct a single adjudicatory hearing''; and

(B) in paragraph (2), by striking ''Such hearing'' and inserting ''If a hearing is held under paragraph (1), the hearing''.

(e) APPLICATION REVIEWS FOR NUCLEAR ENERGY PROJECTS.—Section 185 of the Atomic Energy Act of 1954 (42 U.S.C. 2235) is amended by adding at the end the following:

''c. APPLICATION REVIEW FOR NUCLEAR ENERGY PROJECTS.—

''(1) STREAMLINING LICENSE APPLICATION REVIEW.—With respect to an application for a construction permit, operating license, or combined construction permit and operating license for a production facility or utilization facility, the Commission shall—

''(A) undertake an expedited environmental review process and issue any draft environmental impact statements (as required under

the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.)) for the application not later than 24 months after the date on which the application is accepted for docketing; and

"(B) complete the technical review process of the application, issue any safety evaluation reports, and issue any final environmental impact statements (as required under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) for the application) not later than 24 months after the date on which the application is accepted for docketing.

"(2) USE OF EARLY SITE PERMIT ENVIRONMENTAL IMPACT STATEMENT.—

"(A) SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT.—In a proceeding for a combined construction permit and operating license for a site for which an early site permit has been issued, any environmental impact statement prepared by the Commission and cooperating agencies (as required under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.)) shall be prepared as a supple-

ment to the environmental impact statement prepared for the early site permit.

"(B) INCORPORATION BY REFERENCE.—The supplemental environmental impact statement prepared under subparagraph (A) shall—

"(i) incorporate by reference the analysis, findings, and conclusions from the environmental impact statement prepared for the applicable early site permit; and

"(ii) include additional discussion, analyses, findings, and conclusions on matters resolved in the early site permit proceeding only to the extent necessary to address information that—

"(I) is new; and

"(II) would materially change the prior findings or conclusions.

"(3) PRODUCTION OR UTILIZATION FACILITY LOCATED AT AN EXISTING SITE.—In reviewing an application for an early site permit, construction permit, operating license, or combined construction permit and operating license for a proposed production facility or utilization facility that is to be located at the site of an already licensed production facility or utilization facility, the Commission shall,

to the extent practicable, use information that was part of the determination to issue a license for the already licensed production facility or utilization facility.

''(4) HEARING ON EARLY SITE PERMIT, CONSTRUCTION PERMIT, AND COMBINED CONSTRUCTION PERMIT AND OPERATING LICENSE.—

''(A) IN GENERAL.—The Commission shall issue and make immediately effective an early site permit or construction permit for a production facility or utilization facility upon the Commission's finding that the application therefor satisfies the requirements of this Act, notwithstanding any outstanding request for a hearing for such license.

''(B) APPROPRIATE ACTION.—Following completion of any required hearing, the Commission shall take any appropriate action with respect to the early site permit, construction permit, or combined construction permit and operating license to the extent necessary to account for the hearing results.

''(5) EARLY SITE PERMIT DEFINED.—In this subsection, the term 'early site permit' has the meaning given such term in section 52.1 of title 10,

Code of Federal Regulations (as in effect on the date of enactment of this subsection).''.

(f) DEFINITIONS.—In this section:

(1) ADVANCED NUCLEAR REACTOR.—The term ''advanced nuclear reactor'' means a nuclear fission or nuclear fusion reactor, including a prototype plant (as such term is defined in section 50.2 or section 52.1 of title 10, Code of Federal Regulations, as in effect on the date of enactment of this section), with significant improvements compared to a commercial nuclear reactor that is under construction as of the date of enactment of this section, including improvements such as—

(A) additional inherent safety features;

(B) significantly lower levelized cost of electricity;

(C) lower waste yields;

(D) greater fuel utilization;

(E) enhanced reliability;

(F) increased proliferation resistance;

(G) increased thermal efficiency;

(H) reduced consumption of cooling water;

(I) the ability to integrate into electric applications and nonelectric applications;

(J) modular sizes to allow for deployment that corresponds with the demand for electricity; or

(K) operational flexibility to respond to changes in demand for electricity and to complement integration with intermittent renewable energy.

(2) APPLICANT.—The term ''applicant'' means an applicant for a license, certification, permit, or other form of approval from the Commission for an advanced nuclear reactor or a research and test reactor.

(3) COMMISSION.—The term ''Commission'' means the Nuclear Regulatory Commission.

(g) AUTHORIZATION OF APPROPRIATIONS.—

(1) IN GENERAL.—There are authorized to be appropriated to carry out subsections (a), (b), and (c) $20,000,000 for each of fiscal years 2021 through 2030, to remain available until expended.

(2) OFF-FEE APPROPRIATION.—Any funds appropriated to carry out this section may not be recovered by the Commission through the collection of user fees from existing licensees.

**SEC. 305. DEMONSTRATION AND EARLY DEPLOYMENT OF ADVANCED NUCLEAR REACTORS.**

(a) IN GENERAL.—Subtitle B of title VI of the Energy Policy Act of 2005 (Public Law 109–58; 119 Stat. 782) is further amended by adding after section 639(A) (as added by this Act) the following:

**"SEC. 639B. ADVANCED NUCLEAR REACTOR RESEARCH AND DEVELOPMENT GOALS.**

''(a) IN GENERAL.—The Secretary shall, as soon as practicable after the date of enactment of this section, enable the commercial deployment of domestic, advanced, affordable, and clean nuclear energy by—

''(1) demonstrating different advanced nuclear reactor technologies that may be used by the private sector to produce—

''(A) emission-free power at a cost of not more than $70 per mWh;

''(B) heat for industrial purposes or synthetic fuel production;

''(C) a supply of remote or off-grid energy; or

''(D) a power supply that is a necessary backup to a mission for which uninterrupted power is critical;

''(2) developing goals for nuclear energy research programs, which are carried out by the Office of Nuclear Energy of the Department of Energy;

''(3) identifying research that the private sector is unable or unwilling to undertake due to the cost of, or risks associated with, the research; and

''(4) facilitating the access of the private sector—

''(A) to Federal research facilities; and

''(B) to the results of research funded by the Federal Government.

''(b) DEMONSTRATION PROJECTS.—

''(1) IN GENERAL.—Not later than December 31, 2025, the Secretary shall establish a program to enter into agreements to carry out no fewer than 5 demonstration projects pursuant to subsection (a)(1) to demonstrate the suitability of advanced nuclear reactors for commercial applications.

''(2) REQUIREMENTS.—In carrying out demonstration projects under paragraph (1), the Secretary shall—

''(A) ensure the demonstration projects under paragraph (1) cover a diverse range of designs, including designs using different primary coolants;

''(B) ensure that—

''(i) the long-term cost of electricity or heat for each design involved in a demonstration project carried out under this subsection is cost-competitive in the applicable market; and

''(ii) such cost-competitiveness is verified by an external review;

''(C) enter into cost-sharing agreements with partners in accordance with section 988 for the conduct of activities relating to the research, development, and demonstration of private-sector advanced nuclear reactor designs under the program established under paragraph (1);

''(D) work with private sector partners to identify potential sites, including sites owned by the Department, to carry out demonstration projects, as appropriate; and

''(E) align specific activities carried out under demonstration projects that are carried out under this subsection, with priorities identified through direct consultation between—

''(i) the Secretary;

''(ii) the National Laboratories;

''(iii) traditional end-users (such as an electric utility);

''(iv) potential end-users of new technologies (such as petrochemical companies); and

''(v) developers of advanced nuclear reactor technology.

''(c) RESEARCH AND DEVELOPMENT GOALS.—

''(1) IN GENERAL.—The Secretary shall establish and annually update goals for the research to support the demonstration of advanced reactors under subsection (b) and the deployment of subsequent advanced reactors.

''(2) COORDINATION.—In developing and updating the goals, the Secretary shall coordinate with members of private industry.

''(3) REQUIREMENTS.—In developing the goals, the Secretary shall ensure that—

''(A) research activities are focused on—

''(i) key areas of nuclear research, development, and deployment that range from basic research on advanced nuclear reactor generation to full-design development, safety evaluation, and licensing;

"(ii) resolving materials challenges relating to radiation damage or corrosive coolants; and

"(iii) qualification of advanced nuclear fuel;

"(B) infrastructure, such as a versatile reactor-based fast neutron source, which is required to be established in section 955(c)(1) of the Energy Policy Act of 2005 (42 U.S.C. 16275(c)(1)), or a molten salt testing facility to aid in research, is constructed; and

"(C) advanced manufacturing and construction techniques and materials are analyzed to identify strategies to reduce the commercialization cost of advanced nuclear reactors.

"(d) DEFINITIONS.—In this section:

"(1) ADVANCED NUCLEAR REACTOR.—The term 'advanced nuclear reactor' means a nuclear fission or nuclear fusion reactor, including a prototype plant (as such term is defined in section 50.2 or section 52.1 of title 10, Code of Federal Regulations (as in effect on the date of enactment of this section)), with significant improvements compared to a commercial nuclear reactor that is under construc-

tion as of the date of enactment of this section, including improvements such as—

"(A) additional inherent safety features;

"(B) significantly lower levelized cost of electricity;

"(C) lower waste yields;

"(D) greater fuel utilization;

"(E) enhanced reliability;

"(F) increased proliferation resistance;

"(G) increased thermal efficiency;

"(H) reduced consumption of cooling water;

"(I) the ability to integrate into electric applications and nonelectric applications;

"(J) modular sizes to allow for deployment that corresponds with the demand for electricity; or

"(K) operational flexibility to respond to changes in demand for electricity and to complement integration with intermittent renewable energy.

"(2) DEMONSTRATION PROJECT.—The term 'demonstration project' means a project carried out under subsection (b) that—

"(A) includes operation of an advanced nuclear reactor as part of the power generation facilities of an electric utility system; or

"(B) demonstrates the suitability of an advanced nuclear reactor for commercial application.

"(e) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Secretary to carry out this section $1,000,000,000 for each of fiscal years 2021 through 2030.".

(b) TABLE OF CONTENTS AMENDMENT.—The table of contents of the Energy Policy Act of 2005 (42 U.S.C. 15801 note) is further amended by adding after the item relating to section 639A (as added by this Act) the following:

"Sec. 639B. Advanced nuclear reactor research and development goals.".

**SEC. 306. ADVANCED NUCLEAR FUEL SECURITY PROGRAM.**

(a) FINDINGS.—Congress finds that—

(1) the national security nuclear enterprise, which supports the nuclear weapons stockpile stewardship and reactors functions of the National Nuclear Security Administration, requires a domestic fuel cycle, including uranium mining, uranium processing, uranium enrichment, and fuel fabrication, capable of producing low- and high-enriched uranium;

(2) many domestic advanced nuclear power industry participants require access to high-assay, low-enriched uranium fuel for—

(A) initial fuel testing;

(B) operation of demonstration reactors; and

(C) commercial operation of advanced nuclear reactors;

(3) as of the date of enactment of this Act, no domestic uranium enrichment or fuel fabrication capability exists for uranium fuel enriched to greater than 10 weight percent of the uranium-235 isotope;

(4) a healthy commercial nuclear fuel cycle capable of providing higher levels of enriched uranium would benefit—

(A) the relevant national security functions of the National Nuclear Security Administration; and

(B) the domestic advanced nuclear industry of the United States; and

(5) making limited quantities of high-assay, low-enriched uranium available from Department stockpiles of uranium would allow for initial fuel testing and demonstration of advanced nuclear reactor concepts, accelerating—

(A) the path to market of those concepts; and

(B) the development of—

(i) a market for advanced nuclear reactors; and

(ii) a resulting growing commercial nuclear fuel cycle capability.

(b) NUCLEAR ENERGY.—

(1) IN GENERAL.—Subtitle E of title IX of the Energy Policy Act of 2005 (42 U.S.C. 16271 et seq.) is amended by adding at the end the following:

**"SEC. 959A. ADVANCED NUCLEAR FUEL SECURITY PROGRAM.**

''(a) HIGH-ASSAY, LOW-ENRICHED URANIUM PROGRAM FOR ADVANCED NUCLEAR REACTORS.—

''(1) ESTABLISHMENT.—Not later than 1 year after the date of enactment of this section, the Secretary shall establish a program (in this section known as the 'Program') to make available high-assay, low-enriched uranium, through contracts for sale, resale, transfer, or lease, for use in advanced nuclear reactors.

''(2) NUCLEAR FUEL OWNERSHIP.—Each contract under paragraph (1) shall include a provision that—

"(A) requires that any high-assay, low-enriched uranium sold, resold, transferred, or leased under such contract shall remain the property of the Secretary; and

"(B) the Secretary shall be responsible for the final disposition of all radioactive waste created by the irradiation, processing, or purification of any such uranium.

"(3) QUANTITY.—In carrying out the Program, the Secretary shall make available—

"(A) by December 31, 2022, high-assay, low-enriched uranium containing not less than 2 metric tons of the uranium-235 isotope; and

"(B) by December 31, 2025, high-assay, low-enriched uranium containing not less than 10 metric tons of the uranium-235 isotope, which shall include the quantities of the uranium-235 isotope required to be made available under subparagraph (A).

"(4) FACTORS FOR CONSIDERATION.—In carrying out the Program, the Secretary shall take into consideration options for providing high-assay, low-enriched uranium from the stockpile of uranium owned by the Department (including the National

Nuclear Security Administration), including by providing from among such stockpile—

"(A) fuel that—

"(i) directly meets the needs of an end-user; and

"(ii) has been previously used or fabricated for another purpose;

"(B) fuel that can meet the needs of an end-user after removing radioactive contaminants or other contaminants that resulted from a previous use or fabrication of the fuel for research, development, demonstration, or deployment activities of the Department (including activities of the National Nuclear Security Administration); and

"(C) fuel from a high-enriched uranium stockpile, which can be blended with lower-assay uranium to become high-assay, low-enriched uranium that may be used in an advanced nuclear reactor.

"(5) LIMITATION.—The Secretary shall not barter or otherwise sell, resell, or transfer uranium in any form in exchange for services relating to the final disposition of radioactive waste from uranium

that is the subject of a sale, lease, release, or transfer under this section.

''(6) SUNSET.—The Program shall terminate on the earlier of—

''(A) January 1, 2035; or

''(B) the date on which uranium enriched up to, but not equal to, 20 weight percent can be obtained in the commercial market from domestic suppliers, as determined by the Secretary.

''(b) REPORT.—

''(1) IN GENERAL.—Not later than 180 days after the date of enactment of this section, the Secretary shall submit to the Committee on Energy and Natural Resources of the Senate and the Committee on Energy and Commerce of the House of Representatives a report that—

''(A) describes the actions the Secretary proposes to carry out under the Program; and

''(B) includes—

''(i) the estimates under paragraph (3); and

''(ii) the evaluations under paragraph (4).

''(2) COORDINATION AND STAKEHOLDER INPUT.—In developing the report required under paragraph (1), the Secretary shall seek input from—

''(A) the Nuclear Regulatory Commission;

''(B) the National Laboratories;

''(C) institutions of higher education (as such term is defined in section 101 of the Higher Education Act of 1965 (20 U.S.C. 1001(a)));

''(D) a diverse group of entities operating in the nuclear energy industry; and

''(E) a diverse group of technology developers.

''(3) COST AND SCHEDULE ESTIMATES.—The report required under paragraph (1) shall include estimated costs, budgets, and timeframes for enabling the use of high-assay, low-enriched uranium.

''(4) REQUIRED EVALUATIONS.—The report required under paragraph (1) shall evaluate—

''(A) the costs of the actions required to establish and carry out the Program, including with respect to—

''(i) proposed preliminary terms for the sale, resale, transfer, and leasing of high-assay, low-enriched uranium (including guidelines defining the roles and re-

sponsibilities of the Department and the purchaser, transfer recipient, or lessee); and

"(ii) the potential to coordinate with purchasers, transfer recipients, and lessees regarding—

"(I) fuel fabrication; and

"(II) fuel transportation;

"(B) the potential sources of uranium and fuel forms available to carry out the Program;

"(C) options to coordinate carrying out the Program with the operation of the versatile reactor-based fast neuron source, which is required to be established under section 955(c) of the Energy Policy Act of 2005 (42 U.S.C. 16275(c));

"(D) the ability of the domestic uranium market to provide materials for advanced nuclear reactor fuel; and

"(E) any associated legal, regulatory, and policy issues that should be addressed to—

"(i) carry out the Program; and

"(ii) enable the establishment of a domestic industry capable of providing high-assay, low-enriched uranium for commer-

cial and noncommercial purposes, including with respect to the needs of—

''(I) the Department;

''(II) the Secretary of Defense; and

''(III) the under Secretary of the National Nuclear Security Administration.

''(c) DEFINITIONS.—In this section:

''(1) HIGH-ASSAY, LOW-ENRICHED URANIUM.—The term 'high-assay, low-enriched uranium' means uranium that is enriched with the uranium-235 isotope in an assay weight that is greater than 5 percent, but less than 20 percent.

''(2) HIGH-ENRICHED URANIUM.—The term 'high-enriched uranium' means uranium that is enriched with the uranium-235 isotope in an assay weight of 20 percent or more.''.

(2) TABLE OF CONTENTS.—The table of contents of the Energy Policy Act of 2005 (Public Law 109–58; 119 Stat. 594) is amended—

(A) in the item relating to section 957, by inserting ''Sec.'' before ''957'';

(B) in the item relating to section 958, by inserting ''Sec.'' before ''958'';

(C) in the item relating to section 959, by inserting ''Sec.'' before ''959''; and

(D) by adding after the item relating to section 959 (as amended by this paragraph) the following:

''Sec. 959A. Advanced nuclear fuel security program.''.

**SEC. 307. AUTHORIZATION OF APPROPRIATIONS FOR LOAN GUARANTEES FOR ADVANCED NUCLEAR FACILITIES.**

Section 1704 of the Energy Policy Act of 2005 (42 U.S.C. 16514) is amended by adding at the end the following:

''(c) ADVANCED NUCLEAR ENERGY FACILITIES.—The Secretary is authorized to make guarantees and credit subsidies for advanced nuclear energy facilities under section 1703(b)(4) for loans of $10,000,000,000 for each of fiscal years 2021 through 2030, to remain available until expended.''.

**SEC. 308. EXPANDING THE PRODUCTION TAX CREDIT FOR NUCLEAR POWER.**

Section 45J of the Internal Revenue Code of 1986 is amended—

(1) in subsection (a)(1), by striking ''1.8 cents'' and inserting ''2.7 cents'';

(2) in subsection (b)(5)(B)(ii), by striking ''6,000 megawatts'' and inserting ''15,000 megawatts''; and

(3) in subsection (e), by striking paragraph (1) and redesignating paragraphs (2) and (3) as (1) and (2), respectively.

**SEC. 309. AUTHORIZATIONS OF APPROPRIATIONS FOR INNOVATION IN NUCLEAR POWER.**

There are authorized to be appropriated to the Secretary $1,000,000,000 for each of fiscal years 2021 through 2030—

(1) for Gateway for Accelerated Innovation in Nuclear vouchers;

(2) for advanced nuclear technology development funding opportunity announcements;

(3) for advanced small modular reactor research and development;

(4) for the advanced reactor demonstration program; and

(5) up to $60,000,000 for the Nuclear Reactor Innovation Center.

# TITLE IV—CLEAN ELECTRICITY STANDARD

**SEC. 401. CERTIFICATION OF COST-EFFECTIVE MARKET PENETRATION OF CLEAN ELECTRICITY TECHNOLOGIES.**

Title VI of the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. 2601 et seq.) is amended by adding at the end the following:

**"SEC. 610. FEDERAL DECARBONIZATION AND INNOVATION ASSESSMENT PROGRAM.**

''(a) IN GENERAL.—Not later than 2 years after the date of enactment of this section, the Secretary, after consultation with the Administrator of the Environmental Protection Agency, shall establish a program, to be known as the 'Federal Decarbonization and Innovation Assessment Program', to annually review and monitor progress towards the achievement of—

''(1) an 80 percent reduction in annual power sector carbon dioxide emissions, below the level in the year of enactment, by 2050; and

''(2) cost-effective market penetration of advanced clean power generation technologies, in accordance with subsection (b).

''(b) COST-EFFECTIVE MARKET PENETRATION.—Cost-effective market penetration of advanced clean power

generation technologies shall be deemed to have occurred on the date when the Secretary determines that—

''(1) at least 3 gigawatts of new electricity generating capacity using any type of eligible technology has come into commercial operation since enactment of this section, provided that—

''(A) less than 50 percent of the capital costs of such capacity has been subsidized with Federal funds; and

''(B) at least 1 gigawatt of the new electricity generating capacity using eligible technology is coal-fired electricity generation using carbon capture utilization and storage technology; or

''(2) at least one type of eligible technology has similar operating characteristics, such as dispatchability upon demand and duty cycle, as existing fossil-fueled electricity generation and, based on data provided by the Energy Information Administration, has a total cost of electricity generation that is not more than 10 percent higher than the average total cost of electricity generation from such existing fossil-fueled electricity generation that has been constructed within the 5 years prior to enactment of this section.

''(c) CERTIFICATION OF COST-EFFECTIVE MARKET PENETRATION.—Upon making the determination described under subsection (b), but no earlier than 5 years after enactment of this section, the Secretary shall certify that cost-effective market penetration of advanced clean power generation technologies has occurred.

''(d) DEFINITIONS.—In this section:

''(1) ADVANCED DISPATCHABLE RENEWABLE GENERATION.—The term 'advanced dispatchable renewable generation' means renewable electricity generation capacity that the Secretary has determined can be used upon demand by grid operators, including renewable electricity generation facilities that are supported by long-duration energy storage.

''(2) ADVANCED NUCLEAR POWER GENERATION.—The term 'advanced nuclear power generation' means electricity generation capacity using an advanced nuclear reactor, as such term is defined in section 640 of the Energy Policy Act of 2005.

''(3) ELIGIBLE TECHNOLOGIES.—The term 'eligible technologies' means the following types of technologies:

''(A) Advanced nuclear power generation.

''(B) Advanced dispatchable renewable generation.

''(C) Fossil-fueled electricity generation equipped with carbon capture technology, from which at least 90 percent of carbon dioxide output is captured and utilized or stored in a manner that prevents emission to the atmosphere.''.

**SEC. 402. FEDERAL CLEAN ELECTRICITY STANDARD.**

Title VI of the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. 2601 et seq.) is further amended by adding after section 610 (as added by this Act) the following:

**''SEC. 611. FEDERAL CLEAN ELECTRICITY STANDARD.**

''(a) CLEAN ELECTRICITY REQUIREMENT.—

''(1) DEFINITION OF RETAIL ELECTRICITY SUPPLIER.—In this section, as determined for each calendar year, the term 'retail electricity supplier' means an entity in the United States that sold not fewer than 20 megawatt-hours of electric energy to electric consumers for purposes other than resale during the preceding calendar year.

''(2) IN GENERAL.—Effective beginning in the first compliance period of the program, and for each compliance period thereafter, each retail electricity supplier shall surrender clean electricity credits corresponding to the required percentage, as deter-

mined under paragraph (3), of the electric energy it sells to electric consumers.

''(3) DETERMINATION OF REQUIRED PERCENTAGE.—The Secretary shall determine, and may adjust as needed, the required percentage for each compliance period, such that the power sector achieves, by 2050, a reduction in carbon dioxide emissions of 80 percent from emission levels in the year of enactment of this section, and that carbon dioxide emission levels are reduced linearly in each compliance period through 2050, provided that—

''(A) in 2026, the Secretary shall make a projection of the electricity generated in 2030 that could qualify for clean electricity credits under subsection (d);

''(B) the required percentage for the first compliance period shall be the greater of—

''(i) the percentage of electricity generated that would qualify for issuance of clean electricity credits under subsection (d) in the year of enactment of this section; and

''(ii) the Secretary's projection for 2030 under subparagraph (A); and

"(C) the required percentage shall be uniform for each retail electric supplier regulated under this section for any compliance period.

"(4) EARLY PROJECTION OF REQUIRED PERCENTAGE TO PROMOTE COMPLIANCE PLANNING.—Not later than two years after the date of enactment of this section, the Secretary shall make a projection of the required percentage for the first compliance period, extrapolating from the prior five years of electricity generation.

"(b) COMPLIANCE.—A retail electric supplier shall meet the requirements of subsection (a) for each compliance period by—

"(1) submitting to the Secretary a number of clean electricity credits equal to the product of the required percentage for the compliance period times the volume of electric energy the retail electric supplier sold to consumers during the compliance period;

"(2) paying an amount equal to the product of the alternative compliance payment, in the amount specified in subsection (h), times the number of clean electricity credits that would otherwise be due under paragraph (1) in the compliance period; or

''(3) taking a combination of the actions described in paragraphs (1) and (2).

''(c) FEDERAL CLEAN ELECTRICITY CREDIT TRADING PROGRAM.—

''(1) ESTABLISHMENT.—Not later than 180 days after the program trigger date, the Secretary shall establish a Federal clean electricity credit accounting and trading program under which clean electricity credits may be acquired, sold, transferred, and held and electric utilities may submit to the Secretary clean electricity credits to comply with the requirements of this section.

''(2) CLEAN ELECTRICITY CREDITS.—Each year, the Secretary shall issue to each generator of electric energy a quantity of clean electricity credits determined in accordance with subsection (d).

''(3) ADMINISTRATION.—Each clean electricity credit issued under this subsection shall be used only once for the purpose of complying with the requirements of this section.

''(4) DELEGATION OF PROGRAM ADMINISTRATION.—In carrying out this subsection, the Secretary may delegate—

''(A) to the Commission, the implementation of some or all of the program established under paragraph (1); and

''(B) to appropriate entities, the tracking of clean electricity credits.

''(5) BANKING OF CLEAN ELECTRICITY CREDITS.—Clean electricity credits issued under subsection (d) shall be valid for the compliance period in which the clean electricity credit is issued or in any subsequent compliance period.

''(d) ISSUANCE OF CLEAN ELECTRICITY CREDITS.—

''(1) IN GENERAL.—For each calendar year, starting with the year of the program effective date, the Secretary shall issue clean electricity credits to each electricity generator in the United States that has sold electricity and has an annual carbon intensity of less than 0.825 metric tons per megawatt-hour.

''(2) DETERMINATION OF CREDITS ISSUED.—The number of clean electricity credits issued under paragraph (1) shall be equal to the product of—

''(A) the number of megawatt-hours of electric energy sold from the electricity generator; and

"(B) 1.0 minus the quotient obtained by dividing—

"(i) the annual carbon intensity of the generator, as determined in accordance with paragraph (3), expressed in metric tons per megawatt-hour; by

"(ii) 0.82.

"(3) DETERMINATION OF ANNUAL CARBON INTENSITY OF GENERATING FACILITIES.—With respect to paragraph (2)(B)(i), the Secretary shall determine, in consultation with the Administrator of the Environmental Protection Agency, the annual carbon intensity of each generator by dividing—

"(A) the net annual carbon dioxide emissions of the generator; by

"(B) the annual quantity of electric energy generated and sold by the generator.

"(e) DYNAMIC CREDITING.—If the Secretary approves use of a dynamic crediting methodology or methodologies under section 612(c), the Secretary shall implement such methodology or methodologies in lieu of the crediting methodology established under subsection (d)(2) as a means of issuing clean electricity credits.

"(f) CIVIL PENALTIES.—

''(1) IN GENERAL.—Subject to paragraph (2), a retail electric supplier that fails to meet the requirements to submit clean electricity credits or make alternative compliance payments as required by subsection (b) shall be subject to a civil penalty in an amount equal to the product obtained of—

''(A) the number of megawatt-hours of electric energy sold by the retail electric supplier to electric consumers in violation of subsection (b); and

''(B) 200 percent of the value of the applicable alternative compliance payment as determined under subsection (h).

''(2) PROCEDURE FOR ASSESSING PENALTY.—The Secretary shall assess a civil penalty under this subsection in accordance with the procedures for assessing a penalty against a person under section 333(d) of the Energy Policy and Conservation Act (42 U.S.C. 6303(d)).

''(g) SAVINGS PROVISION.—Nothing in this section affects the authority of a State, or a political subdivision of a State, to adopt or enforce any law relating to—

''(1) clean electricity or renewable energy;

''(2) carbon dioxide emissions; or

''(3) the regulation of a retail electric supplier.

''(h) ALTERNATIVE COMPLIANCE PAYMENT.—

''(1) INITIAL AMOUNT.—The alternative compliance payment for the first year of the first compliance period shall be $30 per megawatt hour.

''(2) ANNUAL ADJUSTMENTS TO ALTERNATIVE COMPLIANCE PAYMENT.—For each year after the first year of the first compliance period, the Secretary shall increase the amount of the alternative compliance payment from the amount for the prior year by 5 percent. The Secretary may make an additional annual adjustment to account for inflation, as the Secretary may determine necessary.

''(i) REGULATIONS.—Not later than 1 year after the date of enactment of this section, the Secretary shall promulgate regulations to implement this section.

''(j) DEFINITIONS.—In this section:

''(1) COMPLIANCE PERIOD.—The term 'compliance period' means the 3-year period starting on the program effective date and each 3-year period thereafter until 2050.

''(2) PROGRAM TRIGGER DATE.—The term 'program trigger date' means January 1 of the first calendar year after the Secretary issues the certification under section 610(c).

''(3) PROGRAM EFFECTIVE DATE.—The term 'program effective date' means the earlier of—

''(A) January 1 of the first calendar year that starts two years after the program trigger date; or

''(B) January 1 of the first calendar year that is more than 10 years after the date of enactment of this section.

**"SEC. 612. USE OF DYNAMIC CREDITING TO ISSUE CLEAN ELECTRICITY CREDITS.**

''(a) IDENTIFICATION OF DYNAMIC CREDITING METHODOLOGIES.—Not later than 2 years after the date of enactment of this section, the Secretary, in consultation with the Administrator of the Environmental Protection Agency, shall identify methodologies for calculating the carbon dioxide emissions from electricity generating resources that are avoided or displaced by increasing the generation from generating facilities eligible to receive clean electricity credits under section 611(d). In carrying out this subsection, the Secretary shall—

''(1) identify methodologies that estimate in an accurate manner the net carbon dioxide emissions avoided or displaced due to the electricity generated by each specific generating facility in each generation dispatch interval; and

''(2) identify such a methodology or methodologies, as appropriate for generation resources located within the region served by a regional transmission organization or independent system operator, as defined in section 3 of the Federal Power Act (16 U.S.C. 796), and for generation resources operating outside such regions.

''(b) COMMISSION REVIEW OF DYNAMIC CREDITING METHODOLOGIES.—

''(1) The Secretary shall share the identified dynamic crediting methodologies with the Commission.

''(2) Not later than 120 days after its receipt of the dynamic crediting methodologies from the Secretary, the Commission shall hold a technical conference in partnership with State electric utility regulators to evaluate the dynamic crediting methodologies, including evaluation of alternatives.

''(3) Not later than 180 days after the technical conference held pursuant to paragraph (2), and after providing an opportunity for public comment, the Commission shall provide a report to the Secretary on the technical conference and any Commission recommendations or evaluation concerning dynamic crediting methodologies.

''(c) DETERMINATION.—No later than 180 days following receipt of the report provided pursuant to subsection (b)(3), the Secretary, in consultation with the Administrator of the Environmental Protection Agency, shall approve use of one or more identified dynamic crediting methodologies to issue clean electricity credits if the Secretary determines that such use would—

''(1) significantly enhance confidence that a clean electricity standard would achieve the carbon dioxide emission reduction targets set forth in section 611(a)(2); or

''(2) significantly reduce the costs of achieving such targets.

''(d) USE OF DYNAMIC CREDITING METHODOLOGIES.—If the Secretary approves one or more identified dynamic crediting methodologies under subsection (c), the Secretary shall implement the approved methodology to determine the number of clean electricity credits to be issued to an electricity generator in lieu of the methodology provided in 611(d)(2). The Secretary shall apply a dynamic crediting factor approved under subsection (c) for the first full calendar year after such approval, or for the first year of the first compliance period, whichever is later, except that the Secretary may delay use of approved dynamic crediting methodologies by one year if the Secretary

finds that additional time is needed for the Secretary or the Commission to take actions necessary for implementation under subsection (e).

''(e) IMPLEMENTATION.—

''(1) The Secretary may, by rule, require that the regional transmission organizations, independent system operators, other balancing authorities, and other appropriate entities provide the Secretary with the information necessary for the Secretary to apply any approved dynamic crediting methodology.

''(2) At the request of the Secretary, or upon its own initiative, the Commission shall consider whether changes to tariffs on file under section 205 of the Federal Power Act (16 U.S.C. 824d) are necessary to implement the requirements of any rule promulgated by the Secretary under paragraph (1).''.

**SEC. 403. REGIONAL CLEAN ELECTRICITY PLANNING MODELS.**

(a) DEVELOPMENT OF PLANNING MODELS AND DATA.—Not later than 2 years after the date of enactment this Act, the Secretary shall make available one or more regional electricity planning models and standardized sets of data, including potential renewable energy hourly production profiles at all potential locations for re-

newable energy deployment, that States can use to develop plans for portfolios of clean electricity resources that are capable of achieving the emission reduction trajectory provided in the clean electricity requirements established under section 611 of the Public Utility Regulatory Policies Act of 1978 at least cost and consistent with the need to maintain reliability.

(b) DEVELOPMENT PROCESS.—In making planning models and data available under subsection (a), the Secretary shall—

(1) solicit planning models and standardized, accurate data sets from the national laboratories and universities;

(2) hold jointly with the Commission a technical conference on planning models and standardized data sets, including hourly profiles of renewable energy production at potential deployment locations, and consider the input from such conference in choosing planning models and data sets to make available; and

(3) update the planning models and data sets made available from time to time in response to new information.

(c) USE OF MODELS BY STATES.—The Secretary shall encourage States to use the models and data sets to—

(1) plan collaboratively with other States in the same North American Electric Reliability Corporation reliability region or organized electricity market on least-cost and reliable compliance with the clean electricity standard established under section 611 of the Public Utility Regulatory Policies Act of 1978; and

(2) adopt, and from time to time update, multi-State clean electricity resource deployment goals that promote least-cost deployment consistent with maintaining electric reliability.

**SEC. 404. STAND-BY EMISSION PERFORMANCE STANDARDS.**

(a) ANNUAL REVIEW OF ELECTRIC POWER SECTOR EMISSIONS.—Not later than February 1 of the first year after enactment of this section, and each February 1 thereafter, the Secretary, in consultation with the Administrator of the Environmental Protection Agency, shall publish a determination of the annual average level of greenhouse gas emissions from the electric power sector for the prior three calendar years.

(b) ENFORCEABILITY.—Emission limitations for carbon dioxide emissions from fossil fuel-fired power plants

established under title I of the of the Clean Air Act (42 U.S.C. 7401 et seq.) may be enforced by a State or by the Administrator of the Environmental Protection Agency—

(1) before the clean electricity standard program trigger date, only if—

(A) the Secretary, not earlier than 5 years after the date of enactment of this Act, determines under subsection (a) that the 5-year annual average level of electric power sector greenhouse gas emissions exceeded the annual average level of such emissions for the preceding 5-year period by at least 6 percent; or

(B) the Secretary finds that significantly less than the full amount of funding authorized for programs under this Act has been appropriated, resulting in substantial limitation to or delay of the technology advancement program elements of this Act; or

(2) after the end of a clean electricity standard compliance period, if the clean electricity requirement is not enforced for the compliance period.

(c) CLEAN AIR ACT AUTHORITIES.—Except as provided in this section, neither a State nor the Administrator of the Environmental Protection Agency may enforce any

emission limitation for carbon dioxide emissions from fossil fuel-fired electric power generating units established under title I of the of the Clean Air Act (42 U.S.C. 7401 et seq.).

(d) DEFINITIONS.—In this section:

(1) COMPLIANCE PERIOD.—The term ''compliance period'' has the meaning given such term in section 611(k)(1) of the Public Utility Regulatory Policies Act of 1978.

(2) PROGRAM TRIGGER DATE.—The term ''program trigger date'' has the meaning given such term in section 611(k)(2) of the Public Utility Regulatory Policies Act of 1978.

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