

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.

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

A BILL

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

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

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

4 (a) **SHORT TITLE.**—This Act may be cited as the
5 “Clean Energy Future Through Innovation Act of 2020”.

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

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

6 (2) to build a competitive market for advanced
 7 low- and zero-carbon technologies and a robust
 8 workforce, supply chain, and related legal, commer-
 9 cial, and physical infrastructure.

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

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

13 (1) **SECRETARY.**—The term “Secretary” means
 14 the Secretary of Energy.

15 (2) **DEPARTMENT.**—The term “Department”
 16 means the Department of Energy.

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

Sec. 1. Short title; purposes.

Sec. 2. Definitions; table of contents.

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.

Sec. 112. Carbon capture technologies.

Sec. 113. Carbon storage validation and testing.

Sec. 114. Carbon utilization.

Sec. 115. Advanced energy systems.

**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.

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

- Sec. 131. Enhancement of carbon dioxide sequestration credit.
 Sec. 132. Reform of loan guarantee program.
 Sec. 133. Private activity bonds for carbon dioxide capture facilities.
 Sec. 134. Extension of publicly traded partnership ownership structure.
 Sec. 135. Production tax credit for certain electricity generation using carbon capture utilization and storage.
 Sec. 136. Elective payment of credit.

Subtitle D—Support for Carbon Dioxide Transportation and Sequestration Infrastructure

- Sec. 141. Securing geologic reservoirs for carbon dioxide.
 Sec. 142. Financial assistance for carbon dioxide sequestration infrastructure development.
 Sec. 143. Geologic carbon dioxide sequestration utilities.
 Sec. 144. Coordinated Federal permitting for carbon dioxide pipeline and sequestration facilities.
 Sec. 145. Interagency task force on carbon dioxide pipelines.

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

- Sec. 201. Establishment of technology performance and cost targets.
 Sec. 202. Advanced innovation and commercialization program.
 Sec. 203. Updating mobile homes.
 Sec. 204. Investment tax credits for energy battery storage, offshore wind, and certain hydropower technologies.
 Sec. 205. Extension of production tax credit for solar and on-shore wind.
 Sec. 206. Renewal of qualifying advanced energy project credit.
 Sec. 207. Performance-based tax credits for commercial and residential buildings.
 Sec. 208. Extension of publicly traded partnership ownership structure to renewable energy projects.
 Sec. 209. Manufacturer credit for high-efficiency heat pumps and heat pump water heaters.
 Sec. 210. Other authorizations of appropriations.

TITLE III—EXISTING AND ADVANCED NUCLEAR POWER PLANTS

- Sec. 301. Zero-emissions credit program.
 Sec. 302. Investment tax credit for nuclear energy property.
 Sec. 303. Expanding Federal clean electricity purchasing requirements.
 Sec. 304. Modernizing the Nuclear Regulatory Commission.
 Sec. 305. Demonstration and early deployment of advanced nuclear reactors.
 Sec. 306. Advanced nuclear fuel security program.
 Sec. 307. Authorization of appropriations for loan guarantees for advanced nuclear facilities.
 Sec. 308. Expanding the production tax credit for nuclear power.
 Sec. 309. Authorizations of appropriations for innovation in nuclear power.

TITLE IV—CLEAN ELECTRICITY STANDARD

Sec. 401. Certification of cost-effective market penetration of clean electricity technologies.

Sec. 402. Federal clean electricity standard.

Sec. 403. Regional clean electricity planning models.

Sec. 404. Stand-by emission performance standards.

1 **TITLE I—CARBON CAPTURE,**
2 **UTILIZATION, AND STORAGE**
3 **Subtitle A—Research, Develop-**
4 **ment, and Demonstration for**
5 **Carbon Capture, Utilization,**
6 **and Storage Technologies**

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

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

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

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

14 “(9) Lowering greenhouse gas emissions for all
15 fossil fuel production, generation, delivery, and utili-
16 zation in electricity generation and other industry, to
17 the maximum extent possible.

18 “(10) Preventing, predicting, monitoring, and
19 mitigating the unintended leaking of carbon dioxide
20 or other fossil fuel-related emissions into the atmos-
21 phere.

1 “(11) Developing carbon utilization tech-
2 nologies, products, and methods, including carbon
3 use and reuse for commercial application.

4 “(12) Developing carbon capture technologies,
5 including direct air capture technologies.”;

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

8 “(1) \$2,200,000,000 for fiscal year 2021;

9 “(2) \$2,200,000,000 for fiscal year 2022;

10 “(3) \$2,200,000,000 for fiscal year 2023;

11 “(4) \$2,200,000,000 for fiscal year 2024; and

12 “(5) \$2,200,000,000 for fiscal year 2025.”; and

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

15 “(c) LIMITATION.—None of the funds authorized
16 under this section may be used for Fossil Energy Environ-
17 mental Restoration or Import/Export Authorization.”.

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

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

22 **“SEC. 962. CARBON CAPTURE TECHNOLOGIES.**

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

1 commercial application of carbon capture technologies.

2 The program shall advance the development and use of—

3 “(1) carbon capture technologies in conjunction
4 with coal and natural gas utilization in power sys-
5 tems and industry;

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

8 “(3) advanced separation technologies and di-
9 rect air capture technologies; and

10 “(4) carbon capture technologies used in con-
11 junction with the production from fossil fuel of hy-
12 drogen or ammonia to be used in power systems.

13 “(b) COAL APPLICATIONS.—In conducting the pro-
14 gram under subsection (a), the Secretary shall devote sub-
15 stantial resources to carbon capture technologies for coal
16 applications.

17 “(c) LARGE-SCALE PILOTS.—

18 “(1) IN GENERAL.—In supporting technology
19 development activities under this section, the Sec-
20 retary is encouraged to support large-scale pilot
21 projects that test carbon capture technologies on
22 power systems. Support for such large-scale pilot
23 projects shall be subject to the cost sharing require-
24 ments in section 988(b).

1 “(2) DEFINITION.—For purposes of this sec-
2 tion, the term ‘large-scale pilot project’ means a
3 pilot project that—

4 “(A) represents the scale of technology de-
5 velopment beyond laboratory development and
6 bench scale testing, but not yet advanced to the
7 point of being tested under operational condi-
8 tions at commercial scale;

9 “(B) represents the scale of technology
10 necessary to gain the operational data needed
11 to understand the technical and performance
12 risks of the technology before the application of
13 that technology at commercial scale or in com-
14 mercial-scale demonstration; and

15 “(C) is large enough—

16 “(i) to validate scaling factors; and

17 “(ii) to demonstrate the interaction
18 between major components so that control
19 philosophies for a new process can be de-
20 veloped and enable the technology to ad-
21 vance from large-scale pilot plant applica-
22 tion to commercial-scale demonstration or
23 application.

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

1 plication activities under subsection (a), the Secretary
2 shall consider cost and performance goals, in order to ad-
3 vance development and deployment of carbon capture
4 technologies that can become cost competitive in commer-
5 cial applications.

6 “(e) CARBON CAPTURE PILOT TEST CENTERS.—

7 “(1) IN GENERAL.—Not later than 1 year after
8 the date of the enactment of the Clean Energy Fu-
9 ture Through Innovation Act of 2020, the Secretary
10 shall award grants to one or more entities for the
11 operation of Carbon Capture Test Centers (in this
12 subsection referred to as the ‘Centers’) to provide
13 unique testing capabilities for innovative power sys-
14 tem technologies to capture carbon dioxide or other-
15 wise produce a carbon dioxide stream suitable for
16 utilization or storage.

17 “(2) PURPOSE.—The Centers shall—

18 “(A) advance research, development, dem-
19 onstration, and commercial application of car-
20 bon capture technologies for power systems;
21 and

22 “(B) test technologies that represent the
23 scale of technology development beyond labora-
24 tory testing, but not yet advanced to testing

1 under operational conditions at commercial
2 scale.

3 “(3) APPLICATION.—An entity seeking to oper-
4 ate a Center under this subsection shall submit to
5 the Secretary an application at such time and in
6 such manner as the Secretary may require.

7 “(4) CRITERIA.—In evaluating applications to
8 operate the Centers under this subsection, the Sec-
9 retary shall prioritize grants to applicants that meet
10 one or more of the following criteria:

11 “(A) The applicant has access to existing
12 or planned research facilities with modular
13 technology capabilities.

14 “(B) The applicant is an institution of
15 higher education with established expertise in
16 engineering and design for carbon capture tech-
17 nologies, or has a partnership with such an in-
18 stitution.

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

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

1 “(E) Commercial market participants, in-
2 cluding equipment and technology suppliers and
3 power generators, are involved in the proposed
4 Center.

5 “(5) CONSIDERATIONS.—In awarding grants
6 for the operation of the Centers under this sub-
7 section, the Secretary shall ensure that—

8 “(A) the Centers support pilot testing ap-
9 propriate to diverse regions and resource char-
10 acteristics; and

11 “(B) each Center receiving such a grant
12 demonstrates unique research capabilities,
13 unique regional benefits, or new technology de-
14 velopment opportunities.

15 “(6) SCHEDULE.—Each grant to operate a
16 Center under this subsection shall be awarded for a
17 term of not more than 5 years, subject to the avail-
18 ability of appropriations. The Secretary may renew
19 such 5-year term without limit, subject to a rigorous
20 merit review.

21 “(7) COST SHARING.—The Secretary shall re-
22 quire cost sharing under this subsection in accord-
23 ance with section 988(b).

24 “(8) TERMINATION.—The Secretary may elimi-
25 nate a Center during any 5-year term described in

1 paragraph (6) if such Center is found to be under-
2 performing.

3 “(f) DEMONSTRATION PROJECTS.—

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

9 “(2) ENGINEERING AND DESIGN STUDIES.—

10 The Secretary is authorized to fund engineering and
11 design studies for commercial-scale demonstration
12 projects for power systems in addition to, or in ad-
13 vance of, issuing an award for a demonstration
14 project under this subsection.

15 “(3) APPLICATION.—An entity seeking an
16 award to conduct a demonstration project under this
17 subsection shall submit to the Secretary an applica-
18 tion at such time and in such manner as the Sec-
19 retary may require.

20 “(4) LIMITATIONS.—The Secretary may only
21 provide an award under this subsection after review-
22 ing each application regarding—

23 “(A) the financial strength of the appli-
24 cant;

1 “(B) the construction schedule for the pro-
2 posed demonstration project;

3 “(C) the market risk faced by the tech-
4 nology to be demonstrated; and

5 “(D) the experience of the applicant and
6 construction contractor with similar projects.

7 “(5) REQUIREMENTS.—A demonstration project
8 funded under this subsection shall—

9 “(A) utilize technologies that have com-
10 pleted pilot-scale testing or the equivalent, as
11 determined by the Secretary;

12 “(B) secure and maintain agreements for
13 the utilization or sequestration of captured car-
14 bon dioxide; and

15 “(C) upon completion, demonstrate carbon
16 capture technologies on a power system.

17 “(6) COST SHARING.—The Secretary shall re-
18 quire cost sharing under this subsection in accord-
19 ance with section 988.

20 “(g) DEFINITION OF POWER SYSTEM.—In this sec-
21 tion, the term ‘power system’ means any electricity gener-
22 ating unit that utilizes fossil fuels to generate electricity
23 provided to the electric grid or directly to a consumer.

1 “(h) AUTHORIZATION OF APPROPRIATIONS.—For ac-
2 tivities under this section, there are authorized to be ap-
3 propriated to the Secretary—

4 “(1) \$600,000,000 for fiscal year 2021;

5 “(2) \$600,000,000 for fiscal year 2022;

6 “(3) \$600,000,000 for fiscal year 2023;

7 “(4) \$600,000,000 for fiscal year 2024; and

8 “(5) \$600,000,000 for fiscal year 2025.”.

9 (b) GAO STUDY.—

10 (1) IN GENERAL.—The Comptroller General of
11 the United States shall conduct a study of the De-
12 partment’s successes, failures, practices, and im-
13 provements in carrying out demonstration projects
14 for carbon capture technologies for power systems.
15 In conducting the study, the Comptroller General
16 shall consider, at a minimum—

17 (A) applicant and contractor qualifications;

18 (B) project management practices at the
19 Department;

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

22 (D) completion of third-party agreements,
23 including power purchase agreements and car-
24 bon dioxide offtake agreements;

25 (E) regulatory challenges; and

1 (F) construction challenges.

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

7 (3) CONSIDERATION.—The Secretary shall con-
8 sider any relevant recommendations, as determined
9 by the Secretary, provided in the study required
10 under paragraph (1), and shall adopt such rec-
11 ommendations as the Secretary considers appro-
12 priate.

13 (4) POWER SYSTEM DEFINED.—In this section,
14 the term “power system” means any electricity gen-
15 erating unit that utilizes fossil fuels to generate elec-
16 tricity provided to the electric grid or directly to a
17 consumer.

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

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

21 **“SEC. 963. CARBON STORAGE VALIDATION AND TESTING.**

22 “(a) CARBON STORAGE.—The Secretary shall carry
23 out a program of research, development, and demonstra-
24 tion for carbon storage. The program shall—

1 “(1) in coordination with relevant Federal agen-
2 cies, develop and maintain mapping tools and re-
3 sources that assess the capacity of geologic storage
4 formations in the United States;

5 “(2) develop monitoring tools, modeling of geo-
6 logic formations, and analyses to predict and verify
7 carbon dioxide containment and account for seques-
8 tered carbon dioxide in geologic storage sites;

9 “(3) research potential environmental, safety,
10 and health impacts in the event of a leak to the at-
11 mosphere or to an aquifer, and any corresponding
12 mitigation actions or responses to limit harmful con-
13 sequences;

14 “(4) evaluate the interactions of carbon dioxide
15 with formation solids and fluids, including the pro-
16 pensity of injections to induce seismic activity;

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

19 “(6) determine the fate of carbon dioxide con-
20 current with and following injection into geologic
21 formations; and

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

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

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

6 “(1) operating oil and gas fields;

7 “(2) depleted oil and gas fields;

8 “(3) residual oil zones;

9 “(4) unconventional reservoirs and rock types;

10 “(5) unmineable coal seams;

11 “(6) deep saline formations;

12 “(7) deep geologic systems that may be used as
13 engineered reservoirs to extract economical quan-
14 tities of brine from geothermal resources of low per-
15 meability or porosity;

16 “(8) deep geologic systems containing in situ
17 carbon dioxide mineralization formations; and

18 “(9) offshore geologic formations.

19 “(c) REGIONAL CARBON SEQUESTRATION PARTNER-
20 SHIPS.—

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

1 geologic containment of carbon dioxide. The Sec-
2 retary may fund new demonstrations or expand the
3 work completed at one or more of the existing re-
4 gional carbon sequestration partnerships.

5 “(2) DEMONSTRATION COMPONENTS.—Each
6 demonstration described in paragraph (1) shall in-
7 clude longitudinal tests involving carbon dioxide in-
8 jection and monitoring, mitigation, and verification
9 operations.

10 “(3) CLEARINGHOUSE.—The National Energy
11 Technology Laboratory shall act as a clearinghouse
12 of shared information and resources for the regional
13 carbon sequestration partnerships and any new dem-
14 onstrations funded under this section.

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

19 “(A) assesses the progress of all regional
20 carbon sequestration partnerships;

21 “(B) identifies the remaining challenges in
22 achieving carbon sequestration that is reliable
23 and safe for the environment and public health;
24 and

1 “(C) creates a roadmap to integrate geo-
2 logic sequestration sites and carbon utilization
3 with large sources of carbon dioxide in the
4 United States economy.

5 “(5) LARGE-SCALE CARBON SEQUESTRATION
6 DEMONSTRATION.—For purposes of this subsection,
7 ‘large-scale carbon sequestration demonstration’
8 means the injection of more than 1,000,000 tons of
9 carbon dioxide annually or injection at a scale that
10 demonstrates the ability to inject and sequester sev-
11 eral million metric tons carbon dioxide for at least
12 10 years.

13 “(d) INTEGRATED STORAGE PROJECTS.—The Sec-
14 retary may carry out a program for purposes of
15 transitioning the large-scale storage demonstrations under
16 subsection (c) into integrated, commercial storage com-
17 plexes. The program shall focus on—

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

21 “(2) understanding the technical and commer-
22 cial viability of storage sites;

23 “(3) developing the qualification processes that
24 will be necessary for a diverse range of geologic stor-
25 age sites to commercially accept carbon dioxide; and

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

4 “(e) COST SHARING.—The Secretary shall require
5 cost sharing under this section in accordance with section
6 988.

7 “(f) FEDERAL DATA COLLECTION.—The Secretary,
8 in coordination with other Federal agencies including the
9 United States Geological Survey, shall continue and ex-
10 pand ongoing Federal data collection and analysis activi-
11 ties related to carbon dioxide storage, economics, and spa-
12 tial relationships on a local and regional scale, in coordina-
13 tion with State and regional entities.

14 “(g) AUTHORIZATION OF APPROPRIATIONS.—For ac-
15 tivities under this section, there are authorized to be ap-
16 propriated to the Secretary—

17 “(1) \$250,000,000 for fiscal year 2021;

18 “(2) \$250,000,000 for fiscal year 2022;

19 “(3) \$250,000,000 for fiscal year 2023;

20 “(4) \$250,000,000 for fiscal year 2024; and

21 “(5) \$250,000,000 for fiscal year 2025.”.

22 **SEC. 114. CARBON UTILIZATION.**

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

1 **“SEC. 969. CARBON UTILIZATION.**

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

5 “(1) assess and monitor potential changes in
6 life cycle carbon dioxide emissions, and other envi-
7 ronmental safety indicators of new technologies,
8 practices, processes, or methods, used in enhanced
9 hydrocarbon recovery;

10 “(2) identify and evaluate novel uses for car-
11 bon, including the conversion of carbon dioxide for
12 commercial and industrial products, such as—

13 “(A) chemicals;

14 “(B) plastics;

15 “(C) building materials;

16 “(D) fuels;

17 “(E) cement; or

18 “(F) products of coal utilization in power
19 systems (as such term is defined in section
20 962(e)), or other applications; and

21 “(3) identify and develop alternative uses for
22 coal, including products derived from carbon engi-
23 neering, carbon fiber, and coal conversion methods.

24 “(b) AUTHORIZATION OF APPROPRIATIONS.—For ac-
25 tivities under this section, there are authorized to be ap-
26 propriated to the Secretary—

- 1 “(1) \$75,000,000 for fiscal year 2021;
2 “(2) \$75,000,000 for fiscal year 2022;
3 “(3) \$75,000,000 for fiscal year 2023;
4 “(4) \$75,000,000 for fiscal year 2024; and
5 “(5) \$75,000,000 for fiscal year 2025.”.

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

13 (1) analyze the technical feasibility and related
14 challenges to commercial utilization of carbon diox-
15 ide, including—

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

18 (B) mitigating environmental impacts; and

19 (C) regional economic challenges and op-
20 portunities;

21 (2) identify potential markets, industries, or
22 sectors that may benefit from greater access to com-
23 mercial carbon dioxide;

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

1 tion of safe and reliable carbon dioxide transpor-
2 tation, utilization, and storage;

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

5 (5) assess the global status and progress of car-
6 bon utilization technologies (both chemical and bio-
7 logical) in practice today that utilize waste carbon
8 (including carbon dioxide, carbon monoxide, meth-
9 ane, and biogas) from power generation, biofuels
10 production, and other industrial processes;

11 (6) identify emerging technologies and ap-
12 proaches for carbon utilization that show promise
13 for scale-up, demonstration, deployment, and com-
14 mercialization;

15 (7) analyze the factors associated with making
16 carbon utilization technologies viable at a commer-
17 cial scale, including carbon waste stream availability,
18 economics, market capacity, energy, and lifecycle re-
19 quirements;

20 (8) assess the major technical challenges associ-
21 ated with increasing the commercial viability of car-
22 bon reuse technologies, and identify the research and
23 development questions that will address those chal-
24 lenges;

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

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

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

9 Subtitle F of title IX of the Energy Policy Act of
10 2005 (42 U.S.C. 16291 et seq.) is further amended by
11 adding at the end the following:

12 **“SEC. 969A. ADVANCED ENERGY SYSTEMS.**

13 “(a) IN GENERAL.—The Secretary shall carry out a
14 program of research, development, demonstration, and
15 commercial application of technologies that represent a
16 significant change in the methods used to generate elec-
17 tricity from fuels and that will enable a step change in
18 performance, efficiency, and cost of electricity, and that
19 reduce emissions from fossil fuel power generation in the
20 following areas:

21 “(1) High-efficiency turbines for any advanced
22 power system that will lead to natural gas turbine
23 combined cycle efficiency of 67 percent or combus-
24 tion turbine efficiency of 50 percent.

1 “(2) Supercritical carbon dioxide, with an em-
2 phasis on developing directly fired and indirectly
3 fired cycles in the next 10 years.

4 “(3) Advanced combustion systems, including
5 oxy-combustion systems and chemical looping.

6 “(4) Gasification systems to enable carbon cap-
7 ture, improve efficiency, and reduce capital and op-
8 erating costs.

9 “(5) Thermal cycling with ramping or rapid
10 black start capabilities that do not compromise effi-
11 ciency or environmental performance.

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

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

19 “(b) PRIORITY.—In carrying out the program under
20 subsection (a), the Secretary shall give priority to poten-
21 tially transformational technologies that would enable very
22 substantial improvements in performance, efficiency, or
23 cost of electricity as compared to the technology in exist-
24 ence on the date of enactment of this section.

1 “(c) AUTHORIZATION OF APPROPRIATIONS.—For ac-
2 tivities under this section, there are authorized to be ap-
3 propriated to the Secretary \$1,275,000,000 for each of fis-
4 cal years 2021 through 2025.”.

5 **Subtitle B—Deployment of Carbon**
6 **Capture, Utilization, and Stor-**
7 **age With Commercial-Scale**
8 **Electricity Generation Facilities**

9 **SEC. 121. DEPLOYMENT OF CARBON CAPTURE, UTILIZA-**
10 **TION, AND STORAGE TECHNOLOGY WITH**
11 **COMMERCIAL-SCALE ELECTRICITY GENERA-**
12 **TION FACILITIES.**

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

16 **“SEC. 418. FEDERAL SUPPORT FOR DEPLOYMENT OF CAR-**
17 **BON CAPTURE, UTILIZATION, AND STORAGE**
18 **WITH ELECTRICITY GENERATION.**

19 “(a) IN GENERAL.—Subject to the limitations in sub-
20 section (b), the Secretary shall provide support for deploy-
21 ment and use of carbon capture, utilization, and storage
22 at commercial-scale electricity generation facilities by en-
23 tering into a contract for differences, which may not ex-
24 ceed a term of more than 30 years, to provide price cer-
25 tainty for the sale of the electricity generated by, or carbon

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

3 “(b) LIMITATIONS.—

4 “(1) INITIAL CAP.—Except as provided in para-
5 graph (2), the Secretary may not provide support
6 described in subsection (a)—

7 “(A) for eligible power systems with more
8 than 3 gigawatt of cumulative electricity gener-
9 ating capacity; or

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

12 “(2) ADDITIONAL SUPPORT REQUIRED.—If the
13 Secretary determines, based on the study under-
14 taken pursuant to subsection (c), that additional
15 support for the commercial-scale deployment of car-
16 bon capture, utilization, and storage at electricity
17 generation facilities beyond that provided under
18 paragraph (1) is required to establish the market vi-
19 ability of carbon capture, utilization and storage
20 consistent with the purposes of this title, the Sec-
21 retary may provide support under subsection (a) for
22 additional eligible power systems with not more than
23 8 gigawatts of additional cumulative electricity gen-
24 erating capacity.

1 “(c) STUDY.—The Secretary shall conduct a study to
2 evaluate whether the support provided under subsection
3 (a), combined with other Federal programs and policies
4 and with commercial technology deployments, has estab-
5 lished the market viability of using carbon capture, utiliza-
6 tion, and storage at commercial-scale electricity gener-
7 ating facilities consistent with the purposes of this title.

8 The study shall be initiated no later than the earlier of—

9 “(1) the date the Secretary reaches the initial
10 cap on support for eligible power systems in sub-
11 section (b)(1); or

12 “(2) the date that is 7 years after the date of
13 enactment of this section.

14 “(d) APPLICATION.—

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

19 “(2) CRITERIA.—In evaluating such an applica-
20 tion, the Secretary shall consider technical, financial,
21 and other factors that the Secretary determines ap-
22 propriate.

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

1 verse fuel types and technologies, including first-of-its-
2 kind technology for carbon capture, utilization, and stor-
3 age capacity.

4 “(f) DEFINITIONS.—In this section:

5 “(1) POWER SYSTEM.—The term ‘power sys-
6 tem’ means an electricity generating unit that uti-
7 lizes fossil fuels to generate electricity that is pro-
8 vided to the electric grid or directly to a consumer.

9 “(2) ELIGIBLE POWER SYSTEM.—The term ‘eli-
10 gible power system’ means a power system that—

11 “(A) is equipped with carbon capture tech-
12 nology, or otherwise produces a separate carbon
13 dioxide stream that is suitable for utilization or
14 storage;

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

18 “(C) will utilize or store the captured car-
19 bon dioxide, or has contracted with one or more
20 other entities to utilize or store the captured
21 carbon dioxide.”.

22 (b) TABLE OF CONTENTS AMENDMENT.—The table
23 of contents for the Energy Policy Act of 2005 is amended
24 by adding after the item relating to section 417 the fol-
25 lowing:

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

1 **Subtitle C—Federal Support for**
2 **Commercial Deployment of Car-**
3 **bon Capture, Utilization, and**
4 **Storage**

5 **SEC. 131. ENHANCEMENT OF CARBON DIOXIDE SEQUE-**
6 **STRATION CREDIT.**

7 (a) **EXTENSION OF CREDIT PERIOD.**—Section
8 45Q(a) of the Internal Revenue Code of 1986 is amend-
9 ed—

10 (1) by striking “12-year” in paragraph (3)(A)
11 and inserting “20-year”; and

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

14 (b) **EXTENSION OF QUALIFIED FACILITY CONSTRU-**
15 **CTION BEGINNING DATE.**—Section 45Q(d)(1) of such Code
16 is amended by striking “January 1, 2024” and inserting
17 “January 1, 2033”.

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

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

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

23 “(e) **QUALIFICATION OF FACILITIES RECEIVING TAX**
24 **CREDITS OR FINANCIAL ASSISTANCE.**—Notwithstanding

1 any other provision of law, a project that receives tax cred-
2 its or other financial assistance for clean coal technology
3 shall not be disqualified from receiving a guarantee under
4 this subchapter.”; and

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

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

11 “(1) adjust fees and application requirements to
12 the scale of a project to ensure that the costs of pre-
13 paring and submitting an application are not an
14 undue barrier to participation by smaller, lower risk
15 projects;

16 “(2) ensure that program credit rating require-
17 ments do not, as applied, act as an obstacle to par-
18 ticipation in the loan guarantee program by first-of-
19 a-kind projects, consistent with the purpose of the
20 loan guarantee program to enable debt financing for
21 first-of-a-kind projects that would not otherwise have
22 access to commercial debt markets; and

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

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

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

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

10 “(16) qualified carbon dioxide capture facili-
11 ties.”.

12 (b) QUALIFIED CARBON DIOXIDE CAPTURE FACIL-
13 ITY.—Section 142 of such Code is amended by adding at
14 the end the following new subsection:

15 “(n) QUALIFIED CARBON DIOXIDE CAPTURE FACIL-
16 ITY.—

17 “(1) IN GENERAL.—For purposes of subsection
18 (a)(16), the term ‘qualified carbon dioxide capture
19 facility’ means the eligible components of an indus-
20 trial carbon dioxide facility.

21 “(2) DEFINITIONS.—For purposes of this sub-
22 section—

23 “(A) ELIGIBLE COMPONENT.—The term
24 ‘eligible component’ means, with respect to any

1 industrial carbon dioxide facility, any compo-
2 nent installed in such facility that—

3 “(i) satisfies the requirements under
4 paragraph (3), and

5 “(ii)(I) is used for the purpose of cap-
6 ture, treatment and purification, compres-
7 sion, transportation, or on-site storage of
8 carbon dioxide produced by such facility,
9 or

10 “(II) is integral or functionally related
11 and subordinate to a process described in
12 section 48B(e)(2) (determined by sub-
13 stituting ‘carbon dioxide’ for ‘carbon mon-
14 oxide’).

15 “(B) INDUSTRIAL CARBON DIOXIDE FACIL-
16 ITY.—

17 “(i) IN GENERAL.—The term ‘indus-
18 trial carbon dioxide facility’ means a facil-
19 ity that emits carbon dioxide (including
20 from any fugitive emissions source) that is
21 created as a result of any of the following
22 processes:

23 “(I) Fuel combustion for elec-
24 tricity generation or other purposes.

1 “(II) Gasification for electricity
2 generation or other purposes.

3 “(III) Bioindustrial.

4 “(IV) Fermentation.

5 “(V) Any manufacturing industry
6 described in section 48B(c)(7).

7 “(ii) EXCEPTIONS.—Such term shall
8 not include—

9 “(I) any geological gas facility, or

10 “(II) any air separation unit that
11 does not qualify as gasification equip-
12 ment or is not a necessary component
13 of an oxy-fuel combustion process, a
14 supercritical carbon dioxide process,
15 or other advanced power system.

16 “(iii) GEOLOGICAL GAS FACILITY.—
17 The term ‘geological gas facility’ means a
18 facility that—

19 “(I) produces a raw product con-
20 sisting of gas or mixed gas and liquid
21 from a geological formation,

22 “(II) transports or removes im-
23 purities from such product, or

24 “(III) separates such product
25 into its constituent parts.

1 “(3) CAPTURE AND STORAGE REQUIREMENT.—

2 For purposes of this subsection—

3 “(A) IN GENERAL.—Except as provided in
4 subparagraph (B), a component shall not be
5 treated as meeting the requirements of this
6 paragraph with respect to an industrial carbon
7 dioxide facility unless such component has a
8 capture and storage percentage that is at least
9 65 percent.

10 “(B) EXCEPTION.—In the case of an in-
11 dustrial carbon dioxide facility with a capture
12 and storage percentage that is less than 65 per-
13 cent, a component with respect to such facility
14 shall not be treated as meeting the require-
15 ments of this paragraph unless the percentage
16 of the cost of such component that is financed
17 by tax-exempt bonds is not greater than such
18 capture and storage percentage.

19 “(C) CAPTURE AND STORAGE PERCENT-
20 AGE.—

21 “(i) IN GENERAL.—The capture and
22 storage percentage shall be an amount, ex-
23 pressed as a percentage, equal to the
24 quotient of—

1 “(I) the total metric tons of car-
2 bon dioxide annually captured, trans-
3 ported, and injected into a facility for
4 geologic storage, or an enhanced oil or
5 gas recovery well followed by geologic
6 storage, divided by

7 “(II) the total metric tons of car-
8 bon dioxide which would otherwise be
9 released into the atmosphere each
10 year as industrial emission of green-
11 house gas if the component were not
12 installed in the industrial carbon diox-
13 ide facility.

14 “(ii) LIMITED APPLICATION OF ELIGI-
15 BLE COMPONENTS.—In the case of eligible
16 components that are designed to capture
17 carbon dioxide solely from specific sources
18 of emissions or portions thereof within an
19 industrial carbon dioxide facility, the cap-
20 ture and storage percentage under this
21 subparagraph shall be determined based
22 only on such specific sources of emissions
23 or portions thereof.”.

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

1 (relating to high-speed intercity rail facilities)” and insert-
2 ing “paragraph (11) or (16) of section 142(a)”.

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

6 “(C) CLARIFICATION RELATING TO QUALI-
7 FIED CARBON DIOXIDE CAPTURE FACILITIES.—
8 For purposes of this subsection, the sale of car-
9 bon dioxide produced by a qualified carbon di-
10 oxide capture facility (as defined in section
11 142(n)) which is owned by a governmental unit
12 shall not constitute private business use.”.

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

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

18 (a) IN GENERAL.—Section 7704(d)(1)(E) of the In-
19 ternal Revenue Code of 1986 is amended—

20 (1) by striking “income and gains derived from
21 the exploration” and inserting “income and gains
22 derived from any of the following:

23 “(i) The exploration”; and

24 (2) by inserting a period after “40A(d)(1)” and
25 inserting thereafter the following:

1 “(ii) The production, storage, or
2 transportation of any fuel which—

3 “(I) uses carbon dioxide captured
4 from an anthropogenic source or the
5 atmosphere as its primary feedstock,
6 and

7 “(II) is determined by the Sec-
8 retary, in consultation with the Sec-
9 retary of Energy and the Adminis-
10 trator of the Environmental Protec-
11 tion Agency, to achieve a reduction of
12 not less than a 60 percent in lifecycle
13 greenhouse gas emissions (as defined
14 in section 211(o)(1)(H) of the Clean
15 Air Act) compared to baseline lifecycle
16 greenhouse gas emissions (as defined
17 in section 211(o)(1)(C) of such Act).

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

22 “(iii) The production of any product
23 or the generation of electric power from a
24 project—

1 “(I) which meets the require-
2 ments of subparagraphs (A) and (B)
3 of section 48B(c)(1), and

4 “(II) not less than 75 percent of
5 the total carbon dioxide emissions of
6 which is qualified carbon oxide (as de-
7 fined in section 45Q(c)) which is dis-
8 posed of or utilized as provided in
9 paragraph (6).

10 “(iv) The generation or storage of
11 electric power (including associated income
12 from the sale or marketing of energy, ca-
13 pacity, resource adequacy, and ancillary
14 services) produced from any power genera-
15 tion facility which is, or from any power
16 generation unit within, a qualified facility
17 under section 45Q(d) and not less than 50
18 percent (30 percent in the case of a facility
19 or unit placed in service before January 1,
20 2017) of the total carbon dioxide emissions
21 of which is qualified carbon oxide which is
22 disposed of or utilized as provided in para-
23 graph (7).

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

1 eration facility) which is a qualified facility
2 described in section 45Q(c) and the cap-
3 tured qualified carbon oxide (as so defined)
4 of which is disposed of as provided in para-
5 graph (6).”.

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

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

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

16 “(B) used as a tertiary injectant (as de-
17 fined in section 45Q(e)(3)) in a qualified en-
18 hanced oil or natural gas recovery project (as
19 defined in section 45Q(e)(2)) and placed into
20 secure geological storage (as so determined),

21 “(C) fixed through photosynthesis or
22 chemosynthesis (including through the growing
23 of algae or bacteria),

1 “(D) chemically converted to a material or
2 chemical compound in which it is securely
3 stored, or

4 “(E) used for any other purpose which the
5 Secretary determines has the potential to
6 strengthen or significantly develop a competitive
7 market for carbon dioxide captured from man-
8 made sources.”.

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

12 **SEC. 135. PRODUCTION TAX CREDIT FOR CERTAIN ELEC-**
13 **TRICITY GENERATION USING CARBON CAP-**
14 **TURE UTILIZATION AND STORAGE.**

15 (a) IN GENERAL.—Subpart D of part IV of sub-
16 chapter A of chapter 1 of the Internal Revenue Code of
17 1986 is amended by adding at the end the following new
18 section:

19 **“SEC. 45U. ELECTRICITY PRODUCED USING CARBON CAP-**
20 **TURE UTILIZATION AND STORAGE TECH-**
21 **NOLOGY.**

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

1 “(1) in the case of a qualified facility using fos-
2 sil fuels, the product of—

3 “(A) the megawatt hours of electricity—

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

8 “(ii) sold by the taxpayer to an unre-
9 lated person during the taxable year, mul-
10 tiplied by

11 “(B)(i) \$30 per megawatt hour in the case
12 of a qualified facility storing carbon in secure
13 geological storage, or

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

18 “(C) the discount factor,

19 “(2) in the case of electricity generation facili-
20 ties using exclusively qualified hydrogen, qualified
21 ammonia, or qualified blends, the product of—

22 “(A) the megawatt hours of electricity—

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

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

3 “(ii) sold by the taxpayer to an unre-
4 lated person during the taxable year, mul-
5 tiplied by

6 “(B) \$100 per megawatt hour.

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

8 “(1) DISCOUNT FACTOR.—The term ‘discount
9 factor’ means an amount equal to 90 divided by the
10 annual carbon dioxide emissions rate expressed in
11 pounds per megawatt-hour for a qualified facility,
12 except that—

13 “(A) if the annual carbon dioxide emis-
14 sions rate for a qualified facility is less than 90
15 pounds per megawatt-hour, the discount factor
16 is equal to 1, and

17 “(B) if the annual carbon dioxide emis-
18 sions rate for a qualified facility is greater 180
19 pounds per megawatt-hour, the discount factor
20 is equal to 0.

21 “(2) QUALIFIED AMMONIA.—The term ‘quali-
22 fied ammonia’ means ammonia fuel produced with
23 less than 17.5 pounds of carbon dioxide emissions
24 per million Btu of gross fuel heating value.

1 “(3) QUALIFIED BLEND.—The term ‘qualified
2 blend’ means a blend of qualified hydrogen or quali-
3 fied ammonia with fossil fuel in which the fossil fuel
4 provides no more than 30 percent of the heating
5 value input.

6 “(4) QUALIFIED FACILITY.—The term ‘quali-
7 fied facility’ means an electricity generation plant
8 that—

9 “(A) is equipped with carbon capture
10 equipment, the construction of which com-
11 menced before January 1, 2033,

12 “(B) captures carbon oxide using carbon
13 capture equipment,

14 “(C) stores captured carbon oxide in se-
15 cure geological storage or uses captured carbon
16 oxide as a tertiary injectant in a qualified en-
17 hanced oil or natural gas recovery project, and

18 “(D) has not been the basis for a credit re-
19 ceived under section 45Q.

20 “(5) QUALIFIED HYDROGEN.—The term ‘quali-
21 fied hydrogen’ means hydrogen fuel produced with
22 less than 17.5 pounds of carbon dioxide emissions
23 per million Btu of gross fuel heating value.”.

24 (b) PART OF GENERAL BUSINESS CREDIT.—Section
25 38(B) of such Code is amended by striking “plus” at the

1 end of paragraph (32), by striking the period at the end
2 of paragraph (33) and inserting “, plus”, and by adding
3 at the end the following new paragraph:

4 “(34) the carbon capture production credit
5 under section 45U(a).”.

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

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

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

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

13 (a) Subchapter B of chapter 65 of the Internal Rev-
14 enue Code is amended by adding at the end the following
15 new section:

16 **“SEC. 6431. ELECTIVE PAYMENT OF CREDITS RELATING TO**
17 **CARBON OXIDE SEQUESTRATION.**

18 “(a) ELECTION.—In the case of a taxpayer making
19 an election (at such time and in such manner as the Sec-
20 retary may provide) under this section with respect to any
21 portion of an applicable credit, such taxpayer shall be
22 treated as making a payment against the tax imposed by
23 subtitle A for the taxable year equal to the amount of such
24 portion.

1 “(b) DEFINITIONS AND SPECIAL RULES.—For pur-
2 poses of this section—

3 “(1) GOVERNMENTAL ENTITIES TREATED AS
4 TAXPAYERS.—In the case of an election under this
5 section—

6 “(A) any State or local government, or a
7 political subdivision thereof, or

8 “(B) an Indian Tribal government,
9 shall be treated as a taxpayer for purposes of this
10 section and determining any applicable credit.

11 “(2) APPLICABLE CREDIT.—The term ‘applica-
12 ble credit’ means each of the following credits that
13 would (without regard to this section) be determined
14 with respect to the taxpayer:

15 “(A) A carbon oxide sequestration credit
16 under section 45Q.

17 “(B) A carbon capture production credit
18 under section 45U.

19 “(3) INDIAN TRIBAL GOVERNMENT.—The term
20 ‘Indian Tribal government’ shall have the meaning
21 given such term by section 139E.

22 “(4) TIMING.—The payment described in sub-
23 section (a) shall be treated as made on—

24 “(A) in the case of any government, or po-
25 litical subdivision, to which paragraph (1) ap-

1 plies and for which no return is required under
2 section 6011 or 6033(a), the later of the date
3 that a return would be due under section
4 6033(a) if such government or subdivision were
5 described in that section or the date on which
6 such government or subdivision submits a claim
7 for credit or refund (at such time and in such
8 manner as the Secretary shall provide), and

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

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

16 “(c) EXCLUSION FROM GROSS INCOME.—Gross in-
17 come of the taxpayer shall be determined without regard
18 to this section.

19 “(d) DENIAL OF DOUBLE BENEFIT.—Solely for pur-
20 poses of section 38, in the case of a taxpayer making an
21 election under this section, the applicable credit shall be
22 reduced by the amount of the portion of such credit with
23 respect to which the taxpayer makes such election.”.

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

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

4 **Subtitle D—Support for Carbon Di-**
 5 **oxide Transportation and Se-**
 6 **questration Infrastructure**

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

9 (a) IN GENERAL.—Subtitle B of title IV of the En-
 10 ergy Policy Act of 2005 (42 U.S.C. 15971 et seq.) is fur-
 11 ther amended by adding after section 418 (as added by
 12 this Act) the following new section:

13 **“SEC. 419. SECURING GEOLOGIC RESERVOIRS FOR STOR-**
 14 **AGE OF CARBON DIOXIDE.**

15 “(a) IN GENERAL.—The Secretary shall establish a
 16 program to—

17 “(1) identify geological formations that are ca-
 18 pable of storing, cumulatively, at least 250,000,000
 19 tons of carbon dioxide with a target storage cost of
 20 less than \$10 per ton;

21 “(2) assess the cost of developing and operating
 22 a carbon dioxide sequestration facility at the geologi-
 23 cal formations identified under paragraph (1); and

24 “(3) support the development of such carbon di-
 25 oxide sequestration facility by providing grants or

1 other appropriate financial assistance to storage fa-
2 cility developers to—

3 “(A) secure property rights that are nec-
4 essary to enable carbon dioxide storage in such
5 geologic formations; and

6 “(B) obtain necessary permits and ap-
7 proval to enable carbon dioxide storage in such
8 geologic formations.

9 “(b) GEOGRAPHIC DIVERSITY.—The Secretary shall
10 carry out subsection (a) with the goal of supporting devel-
11 opment of carbon dioxide sequestration facilities that are
12 capable of storing significant volumes of carbon dioxide
13 at reasonable cost in each of the regions covered by the
14 regional carbon sequestration partnerships established
15 pursuant to section 963.

16 “(c) APPLICATION.—An entity seeking a grant or
17 other appropriate financial assistance provided under this
18 section shall submit to the Secretary an application at
19 such time and in such manner as the Secretary may re-
20 quire.

21 “(d) COST SHARING.—The Secretary shall consider
22 the activities described under subsection (a)(3) to be sub-
23 ject to the cost share requirement for demonstration and
24 commercial application activities under section 988(c).”.

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

“Sec. 419. Securing geologic reservoirs for storage of carbon dioxide.”.

5 **SEC. 142. FINANCIAL ASSISTANCE FOR CARBON DIOXIDE**
6 **SEQUESTRATION INFRASTRUCTURE DEVEL-**
7 **OPMENT.**

8 (a) IN GENERAL.—Subtitle B of title IV of the En-
9 ergy Policy Act of 2005 (42 U.S.C. 15971 et seq.) is fur-
10 ther amended by adding after section 419 (as added by
11 this Act) the following new section:

12 **“SEC. 420. CARBON DIOXIDE SEQUESTRATION INFRA-**
13 **STRUCTURE DEVELOPMENT.**

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

16 “(1) the development of carbon dioxide pipeline
17 infrastructure that is necessary to support the trans-
18 portation of the volumes of carbon dioxide that are
19 expected to be captured at electricity generation fa-
20 cilities to appropriate sites for long term sequestra-
21 tion, giving priority to pipeline projects of significant
22 length and significant throughput capacity; and

23 “(2) the development of geologic sequestration
24 facilities that are necessary to support long-term se-
25 questration of the volumes of carbon dioxide that are

1 expected to be captured at electricity generation fa-
2 cilities.

3 “(b) APPLICATION.—Applications for a grant pro-
4 vided under this section shall be submitted at such time
5 and in such manner as the Secretary may require.

6 “(c) COST SHARING.—The Secretary shall consider
7 support for the development of carbon dioxide pipeline in-
8 frastructure or the development of geologic sequestration
9 facility under subsection (a) to be subject to the cost share
10 requirement for demonstration and commercial application
11 activities under section 988(c).

12 “(d) AUTHORIZATION OF APPROPRIATIONS.—There
13 are authorized to be appropriated to the Secretary to carry
14 out this section \$2,000,000,000 for each of fiscal years
15 2021 through 2025.”.

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

“Sec. 420. Carbon dioxide sequestration infrastructure development.”.

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

22 (a) IN GENERAL.—The Secretary, in collaboration
23 with the Secretary of Transportation and the Adminis-
24 trator of the Environmental Protection Agency, as appro-

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

3 (1) establish a government-owned carbon diox-
4 ide sequestration utility; or

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

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

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

11 (A) conducting engineering studies to sup-
12 port the development of a geologic sequestration
13 facility; and

14 (B) identifying potential carbon dioxide
15 pipeline routes; and

16 (2) with respect to State regulation of a pri-
17 vately owned carbon dioxide sequestration utility—

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

21 (B) assisting with the developing regula-
22 tions for services provided by a privately owned
23 carbon dioxide sequestration utility and the set-
24 ting of rates charged for such services.

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

4 (1) characterizes Federal, State, and local regu-
5 lations that apply to carbon dioxide pipeline and se-
6 questration facility development and operation;

7 (2) identifies any gaps in applicable regulations
8 or standards that need to be addressed to ensure
9 that carbon dioxide pipeline and sequestration facili-
10 ties are operated in a safe and effective manner;

11 (3) evaluates whether regulation of the rates or
12 terms of service for carbon dioxide transportation
13 services or geologic sequestration services are nec-
14 essary to ensure fair access to such services;

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

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

1 **SEC. 144. COORDINATED FEDERAL PERMITTING FOR CAR-**
2 **BON DIOXIDE PIPELINE AND SEQUESTRA-**
3 **TION FACILITIES.**

4 Section 41001(6)(A) of the FAST Act (42 U.S.C.
5 4370m note(6)(A)) is amended by striking “pipelines” and
6 inserting “pipelines (including pipelines for the transpor-
7 tation of carbon dioxide), facilities for the geologic seques-
8 tration of carbon dioxide”.

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

11 (a) **IN GENERAL.**—Not later than 90 days after the
12 date of enactment of this section, the Secretary shall es-
13 tablish an interagency task force (in this section referred
14 to as the “Task Force”) to assess the potential for a na-
15 tional system of carbon dioxide pipelines.

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

18 (1) The Department of Energy.

19 (2) The Department of the Interior.

20 (3) The Environmental Protection Agency.

21 (4) The Department of Transportation.

22 (5) The Federal Energy Regulatory Commis-
23 sion.

24 (6) State, local, and Tribal governments.

25 (7) Any other Federal agency that the Sec-
26 retary determines has a significant interest or role

1 in development of a national system of carbon diox-
2 ide pipelines.

3 (c) DUTIES.—The Task Force shall—

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

8 (2) provide to the public notice of such work-
9 shops not less than 60 days before the date on which
10 each such workshop is conducted;

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

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

19 (A) information and recommendations re-
20 lated to engineering, building, siting, con-
21 structing, and maintaining a national carbon di-
22 oxide pipeline system;

23 (B) recommendations for how to stream-
24 line the permitting process for new carbon diox-
25 ide pipelines;

1 (C) information on how to integrate new
2 carbon dioxide pipelines into existing carbon di-
3 oxide pipeline infrastructure;

4 (D) a determination on whether incentives
5 or other policies are needed to encourage the
6 utilization of the advanced leak detection and
7 mitigation technology and monitoring capabili-
8 ties for the national carbon dioxide pipeline sys-
9 tem;

10 (E) recommendations for how to regulate
11 the national carbon dioxide pipeline system to
12 ensure safety and mitigate environmental im-
13 pacts; and

14 (F) an identification of other Federal and
15 State policy challenges related to the develop-
16 ment of a national system of carbon dioxide
17 pipelines.

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

1 **TITLE II—INNOVATION IN RE-**
2 **NEWABLE ENERGY, ENERGY**
3 **EFFICIENCY, AND STORAGE**

4 **SEC. 201. ESTABLISHMENT OF TECHNOLOGY PERFORM-**
5 **ANCE AND COST TARGETS.**

6 (a) IN GENERAL.—Not later than one year after the
7 date of enactment of this section, the Secretary shall es-
8 tablish technology performance and cost targets for three
9 5-year periods to address existing gaps in technology, with
10 the first such period starting on the date of enactment
11 of this section and the last such period ending on the date
12 that is 15 years following enactment.

13 (b) TARGETS.—Technology and performance cost
14 targets shall be established for each of the following tech-
15 nology categories:

16 (1) Advanced renewable power technologies,
17 which include—

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

20 (B) renewable hydrogen power plants, in-
21 cluding plants for which the hydrogen comes
22 from renewable natural gas or biogas;

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

24 (D) thermal or photovoltaic solar power;

25 (E) hydropower;

1 (F) geothermal power;
2 (G) biomass power; and
3 (H) advanced renewable energy manufac-
4 turing techniques.

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

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

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

13 (3) Electricity transmission technologies, which
14 include underground high-voltage direct current elec-
15 tricity transmission.

16 (4) Commercial, industrial, and residential en-
17 ergy efficiency technologies, which include—

18 (A) retrofit packages that reduce the en-
19 ergy used by an average single-family home by
20 at least 50 percent at a cost of no more than
21 \$25,000 per such home;

22 (B) smart heating, ventilation, and air con-
23 ditioning control technologies that—

1 (i) can be used in commercial build-
2 ings that have between 5,000 and 30,000
3 square feet of floor area;

4 (ii) can reduce heating, ventilation,
5 and air conditioning energy consumption
6 by an average of at least 20 percent com-
7 pared to average commercial buildings;

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

11 (iv) may include a cloud-based infor-
12 mation technology;

13 (C) those technologies that the Secretary
14 identifies as having the ability to improve en-
15 ergy efficiency or reduce emissions in heavy in-
16 dustries, which include those that produce or
17 refine aluminum, steel, cement, oil, or fertilizer;
18 and

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

21 (5) Industrial process and building electrifica-
22 tion technologies, which include—

23 (A) heat pump space heaters;

24 (B) heat pump water heaters;

25 (C) induction stoves; and

1 (D) advanced industrial process heat tech-
2 nologies.

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

6 (1) With respect to the advanced renewable en-
7 ergy technologies projects described in subparagraph
8 (b)(1), \$2,000,000,000 for each of fiscal years 2021
9 through 2025.

10 (2) With respect to the energy storage tech-
11 nologies projects described in subparagraph (b)(2),
12 \$400,000,000 for each of fiscal years 2021 through
13 2025.

14 (3) With respect to the transmission tech-
15 nologies and projects described in subparagraph
16 (b)(3), \$600,000,000 for each of fiscal years 2021
17 through 2025.

18 **SEC. 202. ADVANCED INNOVATION AND COMMERCIALIZA-**
19 **TION PROGRAM.**

20 (a) IN GENERAL.—The Secretary, in collaboration
21 with the National Laboratories, other Federal agencies,
22 and private sector and university partners as the Secretary
23 determines necessary, shall establish a program, to be
24 known as the “Advanced Innovation and Commercializa-
25 tion Program”, to carry out research, development, and

1 demonstration of technology that meets the targets estab-
2 lished for those technologies identified in section 201(b).

3 (b) EARLY DEPLOYMENT.—

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

9 (2) AUTHORIZATION OF APPROPRIATIONS.—

10 There is authorized to be appropriated to carry out
11 this subsection \$3,000,000,000 for each of fiscal
12 years 2021 through 2025.

13 (c) FEDERAL PROCUREMENT.—

14 (1) IN GENERAL.—The Secretary, in collabora-
15 tion with the Secretary of Defense and the Adminis-
16 trator of the General Services Administration, shall
17 establish Federal procurement goals and deadlines
18 for achieving such goals for those technologies iden-
19 tified in section 201(b)(1) through (5).

20 (2) FEDERAL ENERGY AND ADVANCED TECH-
21 NOLOGY ENERGY PROCUREMENT.—The Secretary, in
22 collaboration with the Secretary of Defense and the
23 Administrator of General Services, shall—

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

4 (B) identify and report on barriers to im-
5 proving Federal procurement of energy and
6 technologies that require legislative changes;
7 and

8 (C) take due regard of the recommenda-
9 tions from the 2016 report entitled “Secretary
10 of Energy Advisory Board Report of the Task
11 Force on Federal Energy Management”.

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

13 (a) UPDATING MOBILE HOMES.—Not later than one
14 year after the date of enactment of this section, the Sec-
15 retary shall establish a program to provide grants and
16 technical assistance to individuals or businesses to facili-
17 tate the replacement of energy-inefficient mobile homes
18 with highly efficient zero-energy modular homes.

19 (b) AUTHORIZATION.—There are authorized to be ap-
20 propriated to carry out this section \$2,500,000,000 for
21 each of fiscal years 2021 through 2025, to remain avail-
22 able until expended.

1 **SEC. 204. INVESTMENT TAX CREDITS FOR ENERGY BAT-**
2 **TERY STORAGE, OFFSHORE WIND, AND CER-**
3 **TAIN HYDROPOWER TECHNOLOGIES.**

4 (a) **IN GENERAL.**—Section 48(a)(3)(A) of the Inter-
5 nal Revenue Code of 1986, as amended by section 121,
6 is amended by striking “or” at the end of clause (vii), and
7 by adding at the end the following new clauses:

8 “(ix) equipment which generates wind
9 energy from an offshore facility,

10 “(x) energy storage equipment,

11 “(xi) equipment which makes a non-
12 hydroelectric dam capable of generating
13 hydropower, or

14 “(xii) equipment which generates geo-
15 thermal electricity through an enhanced
16 geothermal system.”.

17 (b) **ALLOWANCE OF 30 PERCENT CREDIT.**—

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

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

24 (A) by striking “solar energy” in the head-
25 ing and inserting “certain”, and

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

4 (c) DEFINITIONS.—

5 (1) ENERGY CREDIT.—Section 48(c) of the In-
6 ternal Revenue Code of 1986 is amended by adding
7 at the end the following new paragraphs:

8 “(5) QUALIFIED OFFSHORE WIND PROPERTY.—

9 “(A) IN GENERAL.—The term ‘qualified
10 offshore wind property’ means an offshore facil-
11 ity using wind to produce electricity.

12 “(B) OFFSHORE FACILITY.—The term
13 ‘offshore facility’ means any facility located in
14 the inland navigable waters of the United
15 States, including the Great Lakes, or in the
16 coastal waters of the United States, including
17 the territorial seas of the United States, the ex-
18 clusive economic zone of the United States, and
19 the outer Continental Shelf of the United
20 States.

21 “(6) ENERGY STORAGE EQUIPMENT.—The term
22 ‘energy storage equipment’ means equipment which
23 receives, stores, and delivers energy using batteries,
24 compressed air, pumped hydropower, hydrogen stor-
25 age (including hydrolysis and electrolysis), thermal

1 energy storage, regenerative fuel cells, flywheels, ca-
2 pacitors, superconducting magnets, or other tech-
3 nologies identified by the Secretary in consultation
4 with the Secretary of Energy, and which has a ca-
5 pacity of not less than 5 Kilowatt hours.

6 “(7) NONHYDROELECTRIC DAM.—The term
7 ‘nonhydroelectric dam’ means a nonhydroelectric
8 dam that—

9 “(A) is licensed by the Federal Energy
10 Regulatory Commission and meets all other ap-
11 plicable environmental, licensing, and regulatory
12 requirements,

13 “(B) was placed in service before the date
14 of the enactment of this paragraph and oper-
15 ated for flood control, navigation, or water sup-
16 ply purposes and did not produce hydroelectric
17 power on the date of the enactment of this
18 paragraph,

19 “(C) is operated so that the water surface
20 elevation at any given location and time that
21 would have occurred in the absence of the hy-
22 droelectric project is maintained, subject to any
23 license requirements imposed under applicable
24 law that change the water surface elevation for

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

3 “(D) includes one more hydroelectric
4 projects which have been certified by the Sec-
5 retary, after consultation with the Federal En-
6 ergy Regulatory Commission, as meeting the re-
7 quirements of clause (iii).

8 “(8) ENHANCED GEOTHERMAL SYSTEM.—The
9 term ‘enhanced geothermal system’ means a system
10 to extract heat by creating a subsurface fracture
11 system to which water can be added through injec-
12 tion wells.”.

13 (2) QUALIFYING ADVANCED ENERGY PROJECT
14 CREDIT.—Section 48C(c)(1)(A)(i)(IV) of the Inter-
15 nal Revenue Code of 1986 is amended by inserting
16 “, including through direct air capture or carbon di-
17 oxide removal” after “emissions”.

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

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

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

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

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

8 (b) SOLAR.—Section 45(d)(4)(A) of such Code is
9 amended by striking “placed in service before January 1,
10 2006” and inserting “construction of which begins before
11 January 1, 2031”.

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

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

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

21 (a) IN GENERAL.—Section 48C(d)(2)(A) of the In-
22 ternal Revenue Code of 1986 is amended by striking “dur-
23 ing the 2-year period beginning on the date the Secretary
24 establishes the program under paragraph (1)”.

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

4 **SEC. 207. PERFORMANCE-BASED TAX CREDITS FOR COM-**
5 **MERCIAL AND RESIDENTIAL BUILDINGS.**

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

9 **“SEC. 45V. DEEP ENERGY RETROFITS AND ZERO-ENERGY**
10 **COMMERCIAL AND RESIDENTIAL BUILDINGS.**

11 “(a) DEFINITIONS.—In this section:

12 “(1) BTU.—The term ‘Btu’ means British
13 Thermal Unit.

14 “(2) BUILDING ENERGY.—The term ‘building
15 energy’ means energy consumed at the building site
16 as measured at the site boundary, which includes
17 heating, cooling, ventilation, domestic hot water, in-
18 door and outdoor lighting, plug loads, process en-
19 ergy, elevators and conveying systems, and
20 intrabuilding transportation systems.

21 “(3) DEEP ENERGY RETROFIT.—The term
22 ‘deep energy retrofit’ means a project that uses en-
23 ergy efficiency measures and renewable energy re-
24 sources to reduce the energy use of an existing
25 building by at least 50 percent on an annual basis

1 relative to the most recent 12-month period in which
2 the building was fully occupied prior to the project,
3 provided that energy efficiency measures must ac-
4 count for at least 80 percent of the reduction in en-
5 ergy use.

6 “(4) DELIVERED ENERGY.—The term ‘delivered
7 energy’ means any type of energy that could be
8 bought or sold as building energy, including elec-
9 tricity, steam, hot or chilled water, natural gas,
10 biogas, landfill gas, coal, coke, propane, petroleum
11 and its derivatives, residual fuel oil, alcohol-based
12 fuels, wood, biomass, and any other material con-
13 sumed as fuel.

14 “(5) EXPORTED ENERGY.—The term ‘exported
15 energy’ means on-site renewable energy supplied
16 through the site boundary and used outside the site
17 boundary.

18 “(6) HIGH RISE COMMERCIAL BUILDING.—The
19 term ‘high rise commercial building’ means a com-
20 mercial building of four or more above grade stories.

21 “(7) HIGH RISE RESIDENTIAL BUILDING.—The
22 term ‘high rise residential building’ means a multi-
23 family building with four or more above grade sto-
24 ries.

1 “(8) kWh.—The term ‘kWh’ means Kilowatt
2 Hour.

3 “(9) LOW RISE RESIDENTIAL BUILDING.—The
4 term ‘low rise residential building’ means a single-
5 family home or multifamily building with no more
6 than three above grade stories.

7 “(10) ON-SITE RENEWABLE ENERGY.—The
8 term ‘on-site renewable energy’ means any renewable
9 energy collected and generated within the site
10 boundary that is used for building energy, and the
11 excess renewable energy exported outside the site
12 boundary, provided that any renewable energy cer-
13 tificates associated with the on-site renewable energy
14 must be retained or retired by the building owner or
15 lessee to be claimed as on-site renewable energy.

16 “(11) RENEWABLE ENERGY.—The term ‘renew-
17 able energy’ means energy generated by biomass,
18 hydro, geothermal, solar, wind, ocean thermal, wave
19 action, or tidal action resources.

20 “(12) RENEWABLE ENERGY CERTIFICATE.—
21 The term ‘renewable energy certificate’ means a cer-
22 tificate or credit that represents and conveys the en-
23 vironmental, social, or other nonpower qualities of
24 one megawatt hour of renewable energy, and can be
25 sold separately from the underlying physical elec-

1 tricity associated with the renewable energy re-
2 source.

3 “(13) SITE BOUNDARY.—The term ‘site bound-
4 ary’ means the limits of the building site across
5 which delivered energy and exported energy are
6 measured.

7 “(14) SOURCE ENERGY.—The term ‘source en-
8 ergy’ means building energy plus the energy losses
9 in thermal combustion in electricity generation re-
10 sources; and energy losses in transmission and dis-
11 tribution to the building site.

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

20 “(16) ZERO-ENERGY-READY BUILDING.—The
21 term ‘zero-energy-ready building’ means a building
22 that—

23 “(A) if it is a commercial building or high
24 rise residential building—

1 “(i) is in compliance with Standard
2 90.1–2019 published by the American So-
3 ciety of Heating, Refrigerating and Air-
4 Conditioning Engineers;

5 “(ii) is in compliance with Appendix
6 CA (Solar-Ready Zone) of the 2021 Inter-
7 national Energy Conservation Code; and

8 “(iii) demonstrates that its energy
9 consumption is at least 30 percent below
10 the maximum permitted under American
11 Society of Heating, Refrigerating and Air-
12 Conditioning Engineers Standard 90.1–
13 2019, as calculated using the methodology
14 in Appendix G of such standard; and

15 “(B) if it is a low rise residential build-
16 ing—

17 “(i) has an Energy Rating Index of
18 40 or less as calculated using the proce-
19 dures in Chapter 3 of the residential sec-
20 tion of the 2012 International Energy
21 Conservation Code but excluding any re-
22 newable energy resources in the calcula-
23 tion, provided that certification of compli-
24 ance with the Energy Rating Index re-
25 quirement shall be made by a registered

1 architect or engineer by another profes-
2 sional authorized by the Secretary of En-
3 ergy by rule;

4 “(ii) is in compliance with Appendix
5 RA (Solar-Ready Zone) of the 2021 Inter-
6 national Energy Conservation Code; and

7 “(iii) is certified under—

8 “(I) the Zero Energy Ready
9 Homes program administered by the
10 Department of Energy; or

11 “(II) the Passive House speci-
12 fications of the Passive Institute US
13 or the International Passive House
14 Institute.

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

18 “(1) the building is located in the United
19 States;

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

22 “(3) if the building has implemented a deep en-
23 ergy retrofit, the project has been completed and
24 certified as a deep energy retrofit by a registered ar-

1 architect or engineer, or by another professional au-
2 thORIZED by the Secretary of Energy by rule; and

3 “(4) if the building is a zero-energy building,
4 the building has been zero-energy over a span of 12
5 continuous months with at least 50 percent occu-
6 pancy as verified—

7 “(A) through certification by the Living
8 Buildings Institute Zero Energy Certification
9 Program;

10 “(B) through certification by the LEED
11 Zero Energy Certification Program Verification;
12 or

13 “(C) by another professional authorized by
14 the Secretary of Energy by rule.

15 “(c) TAX CREDIT AMOUNTS.—

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

19 “(A) for a residential building with no
20 more than four dwelling units, \$5,000 per
21 dwelling unit;

22 “(B) for a residential building with five or
23 more dwelling units, \$3,500 per dwelling unit;
24 and

1 “(C) for a commercial building, \$3 per
2 square foot of floor area.

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

6 “(A) for a residential building with no
7 more than four dwelling units, \$5,000 per
8 dwelling unit;

9 “(B) for a residential building with five or
10 more dwelling units, \$3,500 per dwelling unit;
11 and

12 “(C) for a commercial building that is a
13 zero-energy building for a period of 12 contin-
14 uous months starting after the building is at
15 least 50 percent occupied, \$3 per square foot of
16 floor area, provided that a zero-energy building
17 may also receive the zero-energy-ready building
18 incentive if it meets the criteria for this incen-
19 tive.

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

23 “(A) for a residential building, \$10,000
24 per dwelling unit, up to a maximum of
25 \$1,000,000 per building; and

1 “(B) for a commercial building, \$25 per
2 square foot of floor area, up to a maximum of
3 \$2,000,000 per building.

4 “(d) TAX CREDIT RECIPIENT.—

5 “(1) IN GENERAL.—The person eligible to re-
6 ceive a tax credit under this section shall be—

7 “(A) for a new residential building, the
8 builder;

9 “(B) for an existing residential building
10 that has undergone a deep energy retrofit, the
11 builder;

12 “(C) for a new commercial building, the
13 building owner; and

14 “(D) for an existing commercial building
15 that has undergone a deep energy retrofit, the
16 building owner.

17 “(2) TRANSFER OF CREDIT.—A building owner
18 who is eligible to receive a tax credit under subpara-
19 graphs (C) and (D) of paragraph (1) may transfer
20 such tax credit to the architect, builder, or con-
21 tractor.

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

1 project, including incentives under sections 25C, 25D, and
2 179D of this title.

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

5 “(1) for zero-energy and zero-energy-ready resi-
6 dential buildings, one year after the Secretary of En-
7 ergy determines by rule that such buildings ac-
8 counted for at least 20 percent of new residential
9 buildings in the most recent calendar year;

10 “(2) for zero-energy and zero-energy-ready com-
11 mercial buildings, one year after the Secretary of
12 Energy determines by rule that such buildings ac-
13 counted for at least 20 percent of new commercial
14 building construction in the most recent calendar
15 year;

16 “(3) for deep energy retrofits to residential
17 buildings, one year after the Secretary of Energy de-
18 termines by rule that at least 10 percent of units at
19 residential buildings have undergone such retrofits;
20 and

21 “(4) for deep energy retrofits to commercial
22 buildings, one year after the Secretary of Energy de-
23 termines by rule that at least 10 percent of the floor
24 area of commercial buildings has undergone such
25 retrofits.

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

5 “(h) REPORT TO CONGRESS.—Not later than two
6 years after enactment of this section, and each calendar
7 year thereafter, the Secretary shall report to Congress on
8 the use of tax credits under this section broken down by
9 the categories in subsection (c), which report shall in-
10 clude—

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

13 “(2) the number of units at residential build-
14 ings and the number of square feet of floor area in
15 commercial buildings for which tax credits were
16 awarded to date and in the prior year calendar
17 year.”.

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

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

1 **SEC. 208. EXTENSION OF PUBLICLY TRADED PARTNERSHIP**
2 **OWNERSHIP STRUCTURE TO RENEWABLE EN-**
3 **ERGY PROJECTS.**

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

8 “(vi) The generation of electric power
9 (including the leasing of tangible personal
10 property used for such generation) exclu-
11 sively utilizing any resource described in
12 section 45(c)(1) or energy property de-
13 scribed in section 48 (determined without
14 regard to any termination date) or, in the
15 case of a facility described in paragraph
16 (3) or (7) of section 45(d) (determined
17 without regard to any placed in service
18 date or date by which construction of the
19 facility is required to begin), the accepting
20 or processing of such resource.

21 “(vii) The sale of electric power, ca-
22 pacity, resource adequacy, demand re-
23 sponse capabilities, or ancillary services
24 that is produced or made available from
25 any equipment or facility (operating as a

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

3 “(I) use mechanical, chemical,
4 electrochemical, hydroelectric, or ther-
5 mal processes to store energy that was
6 generated at one time for conversion
7 to electricity at a later time, or

8 “(II) store thermal energy for di-
9 rect use for heating or cooling at a
10 later time in a manner that avoids the
11 need to use electricity at that later
12 time.

13 “(viii) The generation, storage, or dis-
14 tribution of thermal energy exclusively uti-
15 lizing property described in section
16 48(c)(3) (determined without regard to
17 subparagraphs (B) and (D) thereof and
18 without regard to any placed in service
19 date).

20 “(ix) The generation, storage, or dis-
21 tribution of thermal energy exclusively
22 using any resource described in section
23 45(c)(1) or energy property described in
24 clause (i) or (iii) of section 48(a)(3)(A).

1 “(x) The use of recoverable waste en-
2 ergy, as defined in section 371(5) of the
3 Energy Policy and Conservation Act (42
4 U.S.C. 6341(5)).”.

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

8 **SEC. 209. MANUFACTURER CREDIT FOR HIGH-EFFICIENCY**
9 **HEAT PUMPS AND HEAT PUMP WATER HEAT-**
10 **ERS.**

11 (a) IN GENERAL.—The Internal Revenue Code of
12 1986 is further amended by adding after section 45V (as
13 added by this Act) the following new section:

14 **“SEC. 45W. MANUFACTURER CREDIT FOR HIGH-EFFI-**
15 **CIENCY HEAT PUMPS AND HEAT PUMP**
16 **WATER HEATERS.**

17 “(a) CREDIT AMOUNTS.—

18 “(1) IN GENERAL.—For purposes of section 38,
19 the energy efficient heat pump credit determined
20 under this section for any taxable year is an amount
21 equal to the sum of the credit amounts determined
22 under paragraph (2) for each type of qualified en-
23 ergy efficient heat pump produced by the taxpayer
24 during the calendar year ending with or within the
25 taxable year.

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

4 “(A) the applicable amount determined
5 under subsection (b) with respect to such type,
6 multiplied by

7 “(B) the eligible production for such type
8 under subsection (c).

9 “(b) APPLICABLE AMOUNT.—For purposes of sub-
10 section (a):

11 “(1) CONSUMER HEAT PUMP WATER HEAT-
12 ERS.—The applicable amount is \$600 in the case of
13 a consumer heat pump water heater that is manu-
14 factured in calendar years 2022 through 2030 and
15 that has a Uniform Energy Factor of 3.3 or more
16 for electric water heaters and 1.3 or more for gas
17 water heaters.

18 “(2) COMMERCIAL HEAT PUMP WATER HEAT-
19 ERS.—The applicable amount is \$600 in the case of
20 a commercial heat pump water heater manufactured
21 in calendar years 2022 through 2030 and that has
22 a Coefficient of Performance of 3.0 or more for elec-
23 tric water heaters and 1.3 or more for gas water
24 heaters.

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

4 “(A) is manufactured in calendar years
5 2022 through 2030,

6 “(B) in the case of an electric heat pump
7 meets either—

8 “(i) the most recent requirements of
9 the Energy Star Most Efficient Specifica-
10 tion promulgated by the United States En-
11 vironmental Protection Agency before the
12 date of enactment of this section, or

13 “(ii) the most recent Cold Climate
14 Air-Source Heat Pump Specification pro-
15 mulgated by Northeast Energy Efficiency
16 Partnerships before the date of enactment
17 of this section, and

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

21 “(4) COMMERCIAL HEAT PUMPS.—The applica-
22 ble amount is \$24 per thousand British Thermal
23 Units of heating capacity measured at a 17 degree
24 Fahrenheit ambient temperature in the case of a
25 commercial heat pump that is manufactured in cal-

1 endar years 2022 through 2030 and that has a Co-
2 efficient of Performance of 2.3 or more at a 17 de-
3 gree F ambient temperature for electric heat pumps,
4 and 1.2 or more at a 17 degree F ambient tempera-
5 ture for gas heat pumps.

6 “(5) INDUSTRIAL HEAT PUMPS.—The applica-
7 ble amount is \$36 per thousand British Thermal
8 Units of heating capacity for heat pumps with a
9 heating capacity of 2,400 thousand British Thermal
10 Units or less and \$18 per thousand British Thermal
11 Units of heating capacity for heat pumps with a
12 heating capacity above 2,400 thousand British Ther-
13 mal Units in the case of an industrial heat pump
14 that is manufactured and installed in an industrial
15 facility in calendar years 2022 through 2030 and
16 that has a Coefficient of Performance of 2.0 or
17 more.

18 “(c) ELIGIBLE PRODUCTION.—The eligible produc-
19 tion in a calendar year with respect to each type of energy
20 efficient heat pump is—

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

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

1 predecessor) in the United States during the pre-
2 ceding 2-calendar year period.

3 “(d) TYPES OF ENERGY EFFICIENT HEAT PUMPS.—

4 For purposes of this section, the types of energy efficient
5 heat pumps are—

6 “(1) consumer heat pump water heaters de-
7 scribed in subsection (b)(1),

8 “(2) commercial heat pump water heaters de-
9 scribed in subsection (b)(2),

10 “(3) consumer unitary heat pumps described in
11 subsection (b)(3),

12 “(4) commercial heat pumps described in sub-
13 section (b)(4), and

14 “(5) industrial heat pumps described in sub-
15 section (b)(5).

16 “(e) LIMITATIONS.—

17 “(1) AGGREGATE CREDIT AMOUNT ALLOWED.—

18 The aggregate amount of credit allowed under sub-
19 section (a) with respect to a taxpayer for any tax-
20 able year shall not exceed \$250,000,000, reduced by
21 the amount of the credit allowed under subsection
22 (a) to the taxpayer (or any predecessor) for all prior
23 taxable years beginning after December 31, 2021.

24 “(2) LIMITATION BASED ON GROSS RE-
25 CEIPTS.—The credit allowed under subsection (a)

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

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

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

18 “(g) TEST PROCEDURES.—

19 “(1) The Department of Energy shall develop
20 test procedures to determine Coefficient of Perform-
21 ance for—

22 “(A) gas commercial heat pump water
23 heaters,

24 “(B) gas commercial heat pumps, and

25 “(C) industrial heat pumps.

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

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

6 “(1) QUALIFIED ENERGY EFFICIENT HEAT
7 PUMP.—The term ‘qualified energy efficient heat
8 pump’ means—

9 “(A) any consumer heat pump water heat-
10 er described in subsection (b)(1),

11 “(B) any commercial heat pump water
12 heater described in subsection (b)(2),

13 “(C) any consumer unitary heat pump de-
14 scribed in subsection (b)(3),

15 “(D) any commercial heat pump described
16 in subsection (b)(4), and

17 “(E) any industrial heat pump described in
18 subsection (b)(5).

19 “(2) CONSUMER HEAT PUMP WATER HEAT-
20 ER.—The term ‘consumer heat pump water heater’
21 means a water heater that uses a heat pump to heat
22 water and has an electric input of 12 Kilowatt or
23 less or a gas input of 75,000 British Thermal Units
24 per hour or less, measured in accordance with appli-
25 cable Department of Energy test procedures.

1 “(3) COMMERCIAL HEAT PUMP WATER HEAT-
2 ERS.—The term ‘commercial heat pump water heat-
3 er’ means a water heater that uses a heat pump to
4 heat water and has an electric input of more than
5 12 Kilowatt or a gas input of more than 75,000
6 British Thermal Units per hour, measured in ac-
7 cordance with applicable Department of Energy test
8 procedures.

9 “(4) CONSUMER UNITARY HEAT PUMP.—The
10 term ‘consumer unitary heat pump’ means a heat
11 pump designed to provide space heating and cooling
12 with a cooling capacity of 65,000 British Thermal
13 Units per hour or less, measured in accordance with
14 the applicable Department of Energy test proce-
15 dures.

16 “(5) COMMERCIAL HEAT PUMP.—The term
17 ‘commercial heat pump’ means a heat pump de-
18 signed to provide space heating and cooling with a
19 cooling capacity of more than 65,000 British Ther-
20 mal Units per hour, measured in accordance with
21 the applicable Department of Energy test proce-
22 dures.

23 “(6) INDUSTRIAL HEAT PUMP.—The term ‘in-
24 dustrial heat pump’ means a heat pump that up-
25 grades industrial waste heat to a higher temperature

1 such that the delivered heat is produced and sup-
2 plied to the facility more efficiently than conven-
3 tional heating methods, such as a steam or electric
4 resistance boiler.

5 “(7) PRODUCED.—The term ‘produced’ in-
6 cludes manufactured.

7 “(8) UNIFORM ENERGY FACTOR.—The term
8 ‘Uniform Energy Factor’ is a metric used to meas-
9 ure the efficiency of consumer water heaters, with
10 details specified in applicable Department of Energy
11 test procedures.

12 “(9) COEFFICIENT OF PERFORMANCE.—The
13 term ‘Coefficient of Performance’ means the ratio of
14 heat output to energy input, with details specified in
15 applicable Department of Energy test procedures.
16 For gas commercial heat pump water heaters, until
17 there is a Department of Energy test procedure,
18 American National Standards Institute and Amer-
19 ican Society of Heating, Refrigerating and Air-Con-
20 ditioning Engineers Standard 118.1 shall be used.
21 For gas commercial heat pumps, until there is a De-
22 partment of Energy test procedure, American Na-
23 tional Standards Standard Z21.40.4 shall be used.
24 For industrial heat pumps, until there is a Depart-
25 ment of Energy test procedure, manufacturers may

1 use their own tests, provided they publicly post the
2 test conditions and assumptions they used in devel-
3 oping their stated Coefficient of Performance values.

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

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

8 “(2) CONTROLLED GROUP.—

9 “(A) IN GENERAL.—All persons treated as
10 a single employer under subsection (a) or (b) of
11 section 52 or subsection (m) or (o) of section
12 414 shall be treated as a single producer.

13 “(B) INCLUSION OF FOREIGN CORPORA-
14 TIONS.—For purposes of subparagraph (A), in
15 applying subsections (a) and (b) of section 52
16 to this section, section 1563 shall be applied
17 without regard to subsection (b)(2)(C) thereof.

18 “(3) VERIFICATION.—No amount shall be al-
19 lowed as a credit under subsection (a) with respect
20 to which the taxpayer has not submitted such infor-
21 mation or certification as the Secretary, in consulta-
22 tion with the Secretary of Energy, determines nec-
23 essary.

24 “(4) PRODUCTION IN UNITED STATES.—The re-
25 quirement for production in the United States in

1 section (c) does not take effect until January 1,
2 2024.”.

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

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

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

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

11 (1) in subparagraph (D), by striking “; and”
12 and inserting “;”;

13 (2) in subparagraph (E), by striking “2013.”
14 and inserting “2013;”;

15 (3) by adding at the end the following:

16 “(F) \$569,000,000 for fiscal year 2021;

17 “(G) \$713,000,000 for fiscal year 2022;

18 “(H) \$856,000,000 for fiscal year 2023;

19 and

20 “(I) \$1,000,000,000 for fiscal year 2024.”.

21 (b) REGIONAL INNOVATION MODELS.—There are au-
22 thorized to be appropriated to the Secretary for purposes
23 of developing regional innovation models—

24 (1) \$100,000,000 for fiscal year 2021;

1 (2) \$200,000,000 for fiscal year 2022;

2 (3) \$300,000,000 for fiscal year 2023; and

3 (4) \$500,000,000 for fiscal year 2024.

4 (c) GRID MODERNIZATION.—There are authorized to
5 be appropriated to the Secretary for purposes of research,
6 development, demonstration, analysis, technology valida-
7 tion, market transformation, and technical assistance to
8 support grid modernization—

9 (1) \$238,000,000 for fiscal year 2021;

10 (2) \$375,000,000 for fiscal year 2022;

11 (3) \$513,000,000 for fiscal year 2023; and

12 (4) \$650,000,000 for fiscal year 2024.

13 (d) ADVANCED LAND-BASED AND OFFSHORE WIND
14 POWER.—There are authorized to be appropriated to the
15 Secretary for the purposes of research, development, dem-
16 onstration, analysis, technology validation, market trans-
17 formation, and technical assistance to support advanced
18 land-based and offshore wind power—

19 (1) \$178,000,000 for fiscal year 2021;

20 (2) \$252,000,000 for fiscal year 2022;

21 (3) \$326,000,000 for fiscal year 2023; and

22 (4) \$400,000,000 for fiscal year 2024.

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

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

3 (1) \$360,000,000 for fiscal year 2021;

4 (2) \$440,000,000 for fiscal year 2022;

5 (3) \$520,000,000 for fiscal year 2023; and

6 (4) \$600,000,000 for fiscal year 2024.

7 (f) MECHANICAL, CHEMICAL, AND THERMAL STOR-
8 AGE TECHNOLOGY.—There are authorized to be appro-
9 priated to the Secretary for the purposes of research, de-
10 velopment, demonstration, analysis, technology validation,
11 market transformation, and technical assistance to sup-
12 port mechanical, chemical, and thermal storage tech-
13 nology—

14 (1) \$150,000,000 for fiscal year 2021;

15 (2) \$150,000,000 for fiscal year 2022;

16 (3) \$150,000,000 for fiscal year 2023; and

17 (4) \$150,000,000 for fiscal year 2024.

18 (g) BUILDINGS.—There are authorized to be appro-
19 priated to the Secretary for the purposes of research, de-
20 velopment, demonstration, analysis, technology validation,
21 market transformation, and technical assistance to sup-
22 port technologies that improve the energy efficiency of
23 building equipment, the building envelope, building con-
24 trols, and that improve information sharing between the
25 building and the grid, which technologies may include en-

1 ergy efficiency, demand response and electrification tech-
2 nologies in residential, commercial, and industrial build-
3 ings—

4 (1) \$381,000,000 for fiscal year 2021;

5 (2) \$478,000,000 for fiscal year 2022;

6 (3) \$574,000,000 for fiscal year 2023; and

7 (4) \$670,000,000 for fiscal year 2024.

8 (h) INDUSTRY.—There are authorized to be appro-
9 priated to the Secretary for the purposes of research, de-
10 velopment, demonstration, analysis, technology validation,
11 market transformation, and technical assistance to sup-
12 port technologies to reduce emissions in industrial and
13 manufacturing processes, including such technologies re-
14 lating to energy efficiency and electrification—

15 (1) \$381,000,000 for fiscal year 2021;

16 (2) \$478,000,000 for fiscal year 2022;

17 (3) \$574,000,000 for fiscal year 2023; and

18 (4) \$840,000,000 for fiscal year 2024.

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

1 (1) \$70,000,000 is authorized for the Secretary
2 to use each year to establish a supercritical en-
3 hanced geothermal system demonstration program;
4 and

5 (2) \$30,000,000 is authorized for the Secretary
6 to use each year in collaboration with the National
7 Laboratories for supercritical enhanced geothermal
8 systems research and development.

9 **TITLE III—EXISTING AND AD-**
10 **VANCED NUCLEAR POWER**
11 **PLANTS**

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

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

17 (b) ISSUANCE OF CREDITS.—Not later than March
18 1 of each calendar year beginning after the date on which
19 the Zero-Emissions Credit Program is established, under
20 the Zero-Emissions Credit Program the Secretary shall
21 issue an amount of zero-emissions credits to each owner
22 or operator of a qualified nuclear power plant in the quan-
23 tity that is equal to the amount of the megawatt hours
24 of electricity sold by such owner or operator to an orga-
25 nized power market in the prior year.

1 (c) PAYMENT FOR RECEIPT OF CREDITS.—

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

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

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

21 (4) OFFSET FOR VALUE OF CLEAN ELEC-
22 TRICITY CREDITS.—The Secretary shall reduce the
23 payment to a qualified nuclear power plant for a
24 zero-emissions credit by the value of any clean elec-
25 tricity credits issued to the plant for the same quan-

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

5 (d) TERMINATION DATE.—The Zero-Emissions
6 Credit Program shall terminate on the date that is 5 years
7 after the program effective date of the Federal Clean Elec-
8 tricity Standard established under section 611 of the Pub-
9 lic Utility Regulatory Policies Act of 1978.

10 (e) DEFINITIONS.—In this section:

11 (1) ORGANIZED POWER MARKET.—The term
12 “organized power market” means any market—

13 (A) for the wholesale sale of electricity;
14 and

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

19 (2) QUALIFIED NUCLEAR POWER PLANT.—

20 (A) IN GENERAL.—The term “qualified
21 nuclear power plant” means any nuclear power
22 plant that the Secretary determines, based on
23 an application submitted by such plant to the
24 Secretary, is not financially viable or will other-
25 wise be required to retire if it does not receive

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

3 (B) EXCLUSION.—The term “qualified nu-
4 clear power plant” does not include a nuclear
5 power plant that receives a tax credit under sec-
6 tion 48 of the Internal Revenue Code of 1986.

7 (3) ZERO-EMISSIONS CREDIT.—The term “zero-
8 emissions credit” means a credit issued by the Sec-
9 retary under the Zero-Emissions Credit Program
10 that represents 1 megawatt of electricity sold by the
11 owner or operator of a qualified nuclear power plant
12 to an organized power market.

13 (f) RULEMAKING.—Not later than one year after the
14 date of enactment of this section, the Secretary shall final-
15 ize rules for—

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

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

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

23 (a) IN GENERAL.—Section 48(a)(3)(A) of the Inter-
24 nal Revenue Code of 1986 is amended—

25 (1) in clause (vi), by striking “or”;

1 (2) in clause (vii), by inserting “or” at the end;

2 and

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

4 clause:

5 “(viii) qualified nuclear energy prop-
6 erty,”.

7 (b) ELIGIBLE FOR 30-PERCENT CREDIT.—Section
8 48(a)(2)(A)(i) of such Code is amended by striking “and”
9 in subclause (III) and by adding at the end the following
10 new subclause:

11 “(V) energy property described in
12 paragraph (3)(A)(viii) but only with
13 respect to property placed in service
14 before January 1, 2024, and”.

15 (c) QUALIFIED NUCLEAR ENERGY PROPERTY.—Sec-
16 tion 48(c) of such Code is amended by adding at the end
17 the following new paragraph:

18 “(5) QUALIFIED NUCLEAR ENERGY PROP-
19 erty.—

20 “(A) IN GENERAL.—The term ‘qualified
21 nuclear energy property’ means any amounts
22 paid or incurred for the refueling of, and any
23 other expenditures described in section 263(a)
24 with respect to, a qualifying nuclear power
25 plant.

1 “(B) QUALIFYING NUCLEAR POWER
2 PLANT.—The term ‘qualifying nuclear power
3 plant’ means a nuclear power plant which—

4 “(i) submitted an application for li-
5 cense renewal to the Nuclear Regulatory
6 Commission in accordance with part 54 of
7 title 10, Code of Federal Regulations, be-
8 fore January 1, 2026, or

9 “(ii) certified to the Secretary (at
10 such time and in such form and in such
11 manner as the Secretary prescribes) that
12 such plant will submit an application for li-
13 cense renewal to the Nuclear Regulatory
14 Commission in accordance with part 54 of
15 title 10, Code of Federal Regulations, be-
16 fore January 1, 2026.

17 “(C) SPECIAL RULES.—

18 “(i) BASIS.—For purposes of sub-
19 section (a), the cumulative amounts paid
20 or incurred by the taxpayer during the tax-
21 able year with respect to a qualifying nu-
22 clear power plant, which are properly
23 chargeable to capital account, shall be
24 treated as the basis of the qualified nuclear

1 energy property placed in service for that
2 taxable year.

3 “(ii) PLACED IN SERVICE.—For pur-
4 poses of subsection (a), qualified nuclear
5 energy property shall be treated as having
6 been placed in service on the last day of
7 the taxable year in which the taxpayer
8 pays or incurs such amounts described in
9 clause (i).

10 “(iii) RECAPTURE.—The Secretary
11 shall, by regulations, provide for recap-
12 turing the benefit of any credit allowable
13 under subsection (a) to any qualifying nu-
14 clear power plant which made a certifi-
15 cation pursuant to subparagraph (B) but
16 does not file an application of license re-
17 newal to the Nuclear Regulatory Commis-
18 sion in accordance with part 54 of title 10,
19 Code of Federal Regulations, before Janu-
20 ary 1, 2026.”.

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

1 “(7) PHASEOUT FOR QUALIFIED NUCLEAR EN-
2 ERGY PROPERTY.—In the case of qualified nuclear
3 energy property, the energy percentage determined
4 under paragraph (2) shall be equal to—

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

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

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

15 (f) TRANSFER OF CREDIT BY CERTAIN PUBLIC EN-
16 TITIES.—

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

20 “(e) SPECIAL RULE FOR QUALIFIED NUCLEAR EN-
21 ERGY PROPERTY.—

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

1 “(A) the taxpayer would be a qualified
2 public entity, and

3 “(B) such entity elects the application of
4 this subsection for such taxable year with re-
5 spect to all (or any portion specified in such
6 election) of such credit, the eligible project part-
7 ner specified in such election (and not the
8 qualified public entity) shall be treated as the
9 taxpayer for purposes of this title with respect
10 to such credit (or such portion thereof).

11 “(2) DEFINITIONS.—For purposes of this sub-
12 section:

13 “(A) QUALIFIED PUBLIC ENTITY.—The
14 term ‘qualified public entity’ means—

15 “(i) a Federal, State, or local govern-
16 ment entity, or any political subdivision,
17 agency, or instrumentality thereof,

18 “(ii) a mutual or cooperative electric
19 company described in section 501(c)(12) or
20 section 1381(a)(2), or

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

1 “(B) ELIGIBLE PROJECT PARTNER.—The
2 term ‘eligible project partner’ means—

3 “(i) any person responsible for oper-
4 ating, maintaining, or repairing the quali-
5 fying nuclear power plant to which the
6 credit under subsection (a) relates,

7 “(ii) any person who participates in
8 the provision of the nuclear steam supply
9 system to the qualifying nuclear power
10 plant to which the credit under subsection
11 (a) relates,

12 “(iii) any person who participates in
13 the provision of nuclear fuel to the quali-
14 fying nuclear power plant to which the
15 credit under subsection (a) relates, or

16 “(iv) any person who has an owner-
17 ship interest in such facility.

18 “(3) SPECIAL RULES.—

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

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

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

3 “(ii) the term ‘eligible project partner’
4 shall include any partner of the partner-
5 ship.

6 “(B) TAXABLE YEAR IN WHICH CREDIT
7 TAKEN INTO ACCOUNT.—In the case of any
8 credit (or portion thereof) with respect to which
9 an election is made under subsection (e), such
10 credit shall be taken into account in the first
11 taxable year of the eligible project partner end-
12 ing with, or after, the qualified public entity's
13 taxable year with respect to which the credit
14 was determined.

15 “(C) TREATMENT OF TRANSFER UNDER
16 PRIVATE USE RULES.—For purposes of section
17 141(b)(1), any benefit derived by an eligible
18 project partner in connection with an election
19 under this subsection shall not be taken into ac-
20 count as a private business use.”.

21 (2) SPECIAL RULE FOR PROCEEDS OF TRANS-
22 FERS FOR MUTUAL OR COOPERATIVE ELECTRIC
23 COMPANIES.—Section 501(c)(12) of such Code is
24 amended by adding at the end the following new
25 subparagraph:

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

8 (g) CONFORMING AMENDMENT.—Section
9 48(a)(2)(A) of such Code is amended by striking “para-
10 graph (6)” and inserting “paragraphs (6) and (7)”.

11 (h) EFFECTIVE DATE.—The amendments made by
12 this section shall apply to periods after December 31,
13 2019, in taxable years ending after such date, under rules
14 similar to the rules of section 48(m) of the Internal Rev-
15 enue Code of 1986 (as in effect on the day before the en-
16 actment of the Revenue Reconciliation Act of 1990).

17 **SEC. 303. EXPANDING FEDERAL CLEAN ELECTRICITY PUR-**
18 **CHASING REQUIREMENTS.**

19 (a) AMENDMENTS TO THE FEDERAL PURCHASE RE-
20 QUIREMENTS OF THE ENERGY POLICY ACT OF 2005.—
21 Section 203 of the Energy Policy Act of 2005 (42 U.S.C.
22 15852) is amended—

23 (1) in subsection (a), by striking “, the fol-
24 lowing amounts shall be renewable energy:” and in-

1 serting “, such amount shall be made up of the fol-
2 lowing:”;

3 (2) in subsection (a)(1), by inserting “shall be
4 renewable energy” after “2009”;

5 (3) in subsection (a)(2), by inserting “shall be
6 renewable energy” after “2012”;

7 (4) in subsection (a)(3), by striking “7.5 per-
8 cent in fiscal year 2013 and each fiscal year there-
9 after.” and inserting “7.5 percent in fiscal years
10 2013 through 2019 shall be renewable energy.”;

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

13 “(4) Not less than 35 percent in fiscal year
14 2020 and each year thereafter shall be clean elec-
15 tricity.”;

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

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

20 “(A) renewable energy;

21 “(B) any electric energy generated by a
22 nuclear power plant; and

23 “(C) the percentage of electric energy gen-
24 erated by a power plant that equals the per-

1 centage of carbon dioxide emissions of such
2 plant that are captured and sequestered.”;

3 (7) in subsection (c), by striking “renewable en-
4 ergy” and inserting “clean electricity” in each place
5 it occurs;

6 (8) by redesignating subsection (d) as sub-
7 section (e); and

8 (9) by inserting after subsection (c) the fol-
9 lowing:

10 “(d) **POWER PURCHASE AGREEMENT.**—For the pur-
11 poses of this section, the Secretary may enter into a power
12 purchase agreement for as much as all of the electricity
13 output of a nuclear power plant for the duration of the
14 operational life of such plant if such plant supplies elec-
15 tricity for purposes of national security or mission-critical
16 activities.”.

17 (b) **AMENDMENTS TO ENERGY POLICIES OF THE DE-**
18 **PARTMENT OF DEFENSE AND THE DEPARTMENT OF**
19 **HOMELAND SECURITY.**—Subtitle B of title VI of the En-
20 ergy Policy Act of 2005 is amended by adding at the end
21 the following:

22 **“SEC. 639A. LONG-TERM NUCLEAR POWER PURCHASE**
23 **AGREEMENT PILOT PROGRAM.**

24 “(a) **ESTABLISHMENT.**—The Secretary shall estab-
25 lish and carry out a pilot program for long-term power

1 purchase agreements for electricity generated by nuclear
2 power.

3 “(b) REQUIREMENTS.—In carrying out the pilot pro-
4 gram established under subsection (a), the Secretary
5 shall—

6 “(1) consult and coordinate with the heads of
7 other Federal agencies that may benefit from pur-
8 chasing nuclear power for a period of longer than 10
9 years, including—

10 “(A) the Secretary of Defense;

11 “(B) the Administrator of General Serv-
12 ices; and

13 “(C) the Secretary of Homeland Security;
14 and

15 “(2) not later than 5 years after the date of en-
16 actment of this section, enter into at least 1 power
17 purchase agreement with the owner or operator of a
18 commercial nuclear power plant for up to 30 years.

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

1 retary determines are in the national interest, especially
2 in remote off-grid scenarios or grid-connected scenarios
3 that can provide capabilities commonly known as
4 ‘islanding power capabilities’ during an emergency sce-
5 nario.

6 “(d) EFFECT ON RATES.—A power purchase agree-
7 ment entered into under this section may be at a rate that
8 is higher than the average market rate if the power pur-
9 chase agreement fulfills an applicable consideration de-
10 scribed in subsection (c).”.

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

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

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

19 “(B) PUBLIC UTILITY CONTRACTS.—

20 “(i) TERM.—

21 “(I) IN GENERAL.—A contract
22 under this paragraph to purchase
23 electricity service from a public utility
24 may be for a period of not more than
25 40 years.

1 “(II) OTHER PUBLIC UTILITY
2 SERVICES.—A contract under this
3 paragraph for a public utility service
4 other than a service described in sub-
5 clause (I) may be for a period of not
6 more than 10 years.

7 “(ii) COSTS.—The cost of a contract
8 under this paragraph for any fiscal year
9 may only be paid from the appropriations
10 for that fiscal year.”.

11 **SEC. 304. MODERNIZING THE NUCLEAR REGULATORY COM-**
12 **MISSION.**

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

16 (1) REPORT.—Not later than 90 days after the
17 date of enactment of this section, the Commission
18 shall submit to the Committee on Energy and Com-
19 merce of the House of Representatives and the Com-
20 mittee on Energy and Natural Resources of the Sen-
21 ate a report that recommends how to improve the
22 processes, procedures, and, if appropriate, regula-
23 tions of the Commission with respect to licensing,
24 certification, and approval of advanced nuclear reac-
25 tor designs.

1 (2) REQUIRED RECOMMENDATIONS.—The re-
2 port submitted under paragraph (1) shall include
3 recommendations to—

4 (A) improve all Commission actions with
5 respect to licensing, certification, and approval
6 of advanced nuclear reactor designs, including
7 actions to meet the Commission’s obligations
8 under the National Environmental Policy Act of
9 1969 (42 U.S.C. 4231 et seq.);

10 (B) emphasize risk-informed and perform-
11 ance-based regulatory approaches; and

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

16 (b) STUDY ON ELIMINATION OF FOREIGN LICENSING
17 RESTRICTIONS.—Not later than 18 months after the date
18 of enactment of this section, the Comptroller General, in
19 consultation with the Secretary, shall submit to Congress
20 a report containing the results of a study on the feasibility
21 and implications of repealing restrictions under sections
22 103 d. and 104 d. of the Atomic Energy Act of 1954 (42
23 U.S.C. 2011 et seq.).

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

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

9 (d) INFORMAL HEARING PROCEDURES.—

10 (1) PROCEDURES.—Section 189 a. of the Atom-
11 ic Energy Act of 1954 (42 U.S.C. 2239(a)) is
12 amended by adding at the end the following:

13 “(3) Any hearing under this section shall be con-
14 ducted using informal adjudicatory procedures in accord-
15 ance with section 555 of title 5, United States Code, un-
16 less the Commission determines that formal adjudicatory
17 procedures under section 554, 556, or 557 of title 5,
18 United States Code are necessary—

19 “(A) to develop a sufficient record; or

20 “(B) to achieve fairness.”.

21 (2) HEARINGS ON LICENSING OF URANIUM EN-
22 RICHMENT FACILITIES.—Section 193(b) of the
23 Atomic Energy Act of 1954 (42 U.S.C. 2243(b)) is
24 amended—

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

8 (B) in paragraph (2), by striking “Such
9 hearing” and inserting “If a hearing is held
10 under paragraph (1), the hearing”.

11 (e) APPLICATION REVIEWS FOR NUCLEAR ENERGY
12 PROJECTS.—Section 185 of the Atomic Energy Act of
13 1954 (42 U.S.C. 2235) is amended by adding at the end
14 the following:

15 “c. APPLICATION REVIEW FOR NUCLEAR ENERGY
16 PROJECTS.—

17 “(1) STREAMLINING LICENSE APPLICATION RE-
18 VIEW.—With respect to an application for a con-
19 struction permit, operating license, or combined con-
20 struction permit and operating license for a produc-
21 tion facility or utilization facility, the Commission
22 shall—

23 “(A) undertake an expedited environmental
24 review process and issue any draft environ-
25 mental impact statements (as required under

1 the National Environmental Policy Act of 1969
2 (42 U.S.C. 4321 et seq.) for the application
3 not later than 24 months after the date on
4 which the application is accepted for docketing;
5 and

6 “(B) complete the technical review process
7 of the application, issue any safety evaluation
8 reports, and issue any final environmental im-
9 pact statements (as required under the Na-
10 tional Environmental Policy Act of 1969 (42
11 U.S.C. 4321 et seq.) for the application) not
12 later than 24 months after the date on which
13 the application is accepted for docketing.

14 “(2) USE OF EARLY SITE PERMIT ENVIRON-
15 MENTAL IMPACT STATEMENT.—

16 “(A) SUPPLEMENTAL ENVIRONMENTAL IM-
17 PACT STATEMENT.—In a proceeding for a com-
18 bined construction permit and operating license
19 for a site for which an early site permit has
20 been issued, any environmental impact state-
21 ment prepared by the Commission and cooper-
22 ating agencies (as required under the National
23 Environmental Policy Act of 1969 (42 U.S.C.
24 4321 et seq.)) shall be prepared as a supple-

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

3 “(B) INCORPORATION BY REFERENCE.—

4 The supplemental environmental impact state-
5 ment prepared under subparagraph (A) shall—

6 “(i) incorporate by reference the anal-
7 ysis, findings, and conclusions from the en-
8 vironmental impact statement prepared for
9 the applicable early site permit; and

10 “(ii) include additional discussion,
11 analyses, findings, and conclusions on mat-
12 ters resolved in the early site permit pro-
13 ceeding only to the extent necessary to ad-
14 dress information that—

15 “(I) is new; and

16 “(II) would materially change the
17 prior findings or conclusions.

18 “(3) PRODUCTION OR UTILIZATION FACILITY
19 LOCATED AT AN EXISTING SITE.—In reviewing an
20 application for an early site permit, construction
21 permit, operating license, or combined construction
22 permit and operating license for a proposed produc-
23 tion facility or utilization facility that is to be lo-
24 cated at the site of an already licensed production
25 facility or utilization facility, the Commission shall,

1 to the extent practicable, use information that was
2 part of the determination to issue a license for the
3 already licensed production facility or utilization fa-
4 cility.

5 “(4) HEARING ON EARLY SITE PERMIT, CON-
6 STRUCTION PERMIT, AND COMBINED CONSTRUCTION
7 PERMIT AND OPERATING LICENSE.—

8 “(A) IN GENERAL.—The Commission shall
9 issue and make immediately effective an early
10 site permit or construction permit for a produc-
11 tion facility or utilization facility upon the Com-
12 mission’s finding that the application therefor
13 satisfies the requirements of this Act, notwith-
14 standing any outstanding request for a hearing
15 for such license.

16 “(B) APPROPRIATE ACTION.—Following
17 completion of any required hearing, the Com-
18 mission shall take any appropriate action with
19 respect to the early site permit, construction
20 permit, or combined construction permit and
21 operating license to the extent necessary to ac-
22 count for the hearing results.

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

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

3 (f) DEFINITIONS.—In this section:

4 (1) ADVANCED NUCLEAR REACTOR.—The term
5 “advanced nuclear reactor” means a nuclear fission
6 or nuclear fusion reactor, including a prototype
7 plant (as such term is defined in section 50.2 or sec-
8 tion 52.1 of title 10, Code of Federal Regulations,
9 as in effect on the date of enactment of this section),
10 with significant improvements compared to a com-
11 mercial nuclear reactor that is under construction as
12 of the date of enactment of this section, including
13 improvements such as—

14 (A) additional inherent safety features;

15 (B) significantly lower levelized cost of
16 electricity;

17 (C) lower waste yields;

18 (D) greater fuel utilization;

19 (E) enhanced reliability;

20 (F) increased proliferation resistance;

21 (G) increased thermal efficiency;

22 (H) reduced consumption of cooling water;

23 (I) the ability to integrate into electric ap-
24 plications and nonelectric applications;

1 (J) modular sizes to allow for deployment
2 that corresponds with the demand for elec-
3 tricity; or

4 (K) operational flexibility to respond to
5 changes in demand for electricity and to com-
6 plement integration with intermittent renewable
7 energy.

8 (2) APPLICANT.—The term “applicant” means
9 an applicant for a license, certification, permit, or
10 other form of approval from the Commission for an
11 advanced nuclear reactor or a research and test re-
12 actor.

13 (3) COMMISSION.—The term “Commission”
14 means the Nuclear Regulatory Commission.

15 (g) AUTHORIZATION OF APPROPRIATIONS.—

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

20 (2) OFF-FEE APPROPRIATION.—Any funds ap-
21 propriated to carry out this section may not be re-
22 covered by the Commission through the collection of
23 user fees from existing licensees.

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

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

7 **“SEC. 639B. ADVANCED NUCLEAR REACTOR RESEARCH**
8 **AND DEVELOPMENT GOALS.**

9 “(a) IN GENERAL.—The Secretary shall, as soon as
10 practicable after the date of enactment of this section, en-
11 able the commercial deployment of domestic, advanced, af-
12 fordable, and clean nuclear energy by—

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

16 “(A) emission-free power at a cost of not
17 more than \$70 per mWh;

18 “(B) heat for industrial purposes or syn-
19 thetic fuel production;

20 “(C) a supply of remote or off-grid energy;
21 or

22 “(D) a power supply that is a necessary
23 backup to a mission for which uninterrupted
24 power is critical;

1 “(2) developing goals for nuclear energy re-
2 search programs, which are carried out by the Office
3 of Nuclear Energy of the Department of Energy;

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

7 “(4) facilitating the access of the private sec-
8 tor—

9 “(A) to Federal research facilities; and

10 “(B) to the results of research funded by
11 the Federal Government.

12 “(b) DEMONSTRATION PROJECTS.—

13 “(1) IN GENERAL.—Not later than December
14 31, 2025, the Secretary shall establish a program to
15 enter into agreements to carry out no fewer than 5
16 demonstration projects pursuant to subsection (a)(1)
17 to demonstrate the suitability of advanced nuclear
18 reactors for commercial applications.

19 “(2) REQUIREMENTS.—In carrying out dem-
20 onstration projects under paragraph (1), the Sec-
21 retary shall—

22 “(A) ensure the demonstration projects
23 under paragraph (1) cover a diverse range of
24 designs, including designs using different pri-
25 mary coolants;

1 “(B) ensure that—

2 “(i) the long-term cost of electricity or
3 heat for each design involved in a dem-
4 onstration project carried out under this
5 subsection is cost-competitive in the appli-
6 cable market; and

7 “(ii) such cost-competitiveness is
8 verified by an external review;

9 “(C) enter into cost-sharing agreements
10 with partners in accordance with section 988
11 for the conduct of activities relating to the re-
12 search, development, and demonstration of pri-
13 vate-sector advanced nuclear reactor designs
14 under the program established under paragraph
15 (1);

16 “(D) work with private sector partners to
17 identify potential sites, including sites owned by
18 the Department, to carry out demonstration
19 projects, as appropriate; and

20 “(E) align specific activities carried out
21 under demonstration projects that are carried
22 out under this subsection, with priorities identi-
23 fied through direct consultation between—

24 “(i) the Secretary;

25 “(ii) the National Laboratories;

1 “(iii) traditional end-users (such as an
2 electric utility);

3 “(iv) potential end-users of new tech-
4 nologies (such as petrochemical compa-
5 nies); and

6 “(v) developers of advanced nuclear
7 reactor technology.

8 “(c) RESEARCH AND DEVELOPMENT GOALS.—

9 “(1) IN GENERAL.—The Secretary shall estab-
10 lish and annually update goals for the research to
11 support the demonstration of advanced reactors
12 under subsection (b) and the deployment of subse-
13 quent advanced reactors.

14 “(2) COORDINATION.—In developing and up-
15 dating the goals, the Secretary shall coordinate with
16 members of private industry.

17 “(3) REQUIREMENTS.—In developing the goals,
18 the Secretary shall ensure that—

19 “(A) research activities are focused on—

20 “(i) key areas of nuclear research, de-
21 velopment, and deployment that range
22 from basic research on advanced nuclear
23 reactor generation to full-design develop-
24 ment, safety evaluation, and licensing;

1 “(ii) resolving materials challenges re-
2 relating to radiation damage or corrosive
3 coolants; and

4 “(iii) qualification of advanced nuclear
5 fuel;

6 “(B) infrastructure, such as a versatile re-
7 actor-based fast neutron source, which is re-
8 quired to be established in section 955(c)(1) of
9 the Energy Policy Act of 2005 (42 U.S.C.
10 16275(c)(1)), or a molten salt testing facility to
11 aid in research, is constructed; and

12 “(C) advanced manufacturing and con-
13 struction techniques and materials are analyzed
14 to identify strategies to reduce the commer-
15 cialization cost of advanced nuclear reactors.

16 “(d) DEFINITIONS.—In this section:

17 “(1) ADVANCED NUCLEAR REACTOR.—The
18 term ‘advanced nuclear reactor’ means a nuclear fis-
19 sion or nuclear fusion reactor, including a prototype
20 plant (as such term is defined in section 50.2 or sec-
21 tion 52.1 of title 10, Code of Federal Regulations
22 (as in effect on the date of enactment of this sec-
23 tion)), with significant improvements compared to a
24 commercial nuclear reactor that is under construc-

1 tion as of the date of enactment of this section, in-
2 cluding improvements such as—

3 “(A) additional inherent safety features;

4 “(B) significantly lower levelized cost of
5 electricity;

6 “(C) lower waste yields;

7 “(D) greater fuel utilization;

8 “(E) enhanced reliability;

9 “(F) increased proliferation resistance;

10 “(G) increased thermal efficiency;

11 “(H) reduced consumption of cooling
12 water;

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

15 “(J) modular sizes to allow for deployment
16 that corresponds with the demand for elec-
17 tricity; or

18 “(K) operational flexibility to respond to
19 changes in demand for electricity and to com-
20 plement integration with intermittent renewable
21 energy.

22 “(2) DEMONSTRATION PROJECT.—The term
23 ‘demonstration project’ means a project carried out
24 under subsection (b) that—

1 “(A) includes operation of an advanced nu-
2 clear reactor as part of the power generation fa-
3 cilities of an electric utility system; or

4 “(B) demonstrates the suitability of an ad-
5 vanced nuclear reactor for commercial applica-
6 tion.

7 “(e) AUTHORIZATION OF APPROPRIATIONS.—There
8 are authorized to be appropriated to the Secretary to carry
9 out this section \$1,000,000,000 for each of fiscal years
10 2021 through 2030.”.

11 (b) TABLE OF CONTENTS AMENDMENT.—The table
12 of contents of the Energy Policy Act of 2005 (42 U.S.C.
13 15801 note) is further amended by adding after the item
14 relating to section 639A (as added by this Act) the fol-
15 lowing:

 “Sec. 639B. Advanced nuclear reactor research and development goals.”.

16 **SEC. 306. ADVANCED NUCLEAR FUEL SECURITY PROGRAM.**

17 (a) FINDINGS.—Congress finds that—

18 (1) the national security nuclear enterprise,
19 which supports the nuclear weapons stockpile stew-
20 ardship and reactors functions of the National Nu-
21 clear Security Administration, requires a domestic
22 fuel cycle, including uranium mining, uranium proc-
23 essing, uranium enrichment, and fuel fabrication, ca-
24 pable of producing low- and high-enriched uranium;

1 (2) many domestic advanced nuclear power in-
2 dustry participants require access to high-assay, low-
3 enriched uranium fuel for—

4 (A) initial fuel testing;

5 (B) operation of demonstration reactors;

6 and

7 (C) commercial operation of advanced nu-
8 clear reactors;

9 (3) as of the date of enactment of this Act, no
10 domestic uranium enrichment or fuel fabrication ca-
11 pability exists for uranium fuel enriched to greater
12 than 10 weight percent of the uranium-235 isotope;

13 (4) a healthy commercial nuclear fuel cycle ca-
14 pable of providing higher levels of enriched uranium
15 would benefit—

16 (A) the relevant national security functions
17 of the National Nuclear Security Administra-
18 tion; and

19 (B) the domestic advanced nuclear indus-
20 try of the United States; and

21 (5) making limited quantities of high-assay,
22 low-enriched uranium available from Department
23 stockpiles of uranium would allow for initial fuel
24 testing and demonstration of advanced nuclear reac-
25 tor concepts, accelerating—

1 (A) the path to market of those concepts;

2 and

3 (B) the development of—

4 (i) a market for advanced nuclear re-
5 actors; and

6 (ii) a resulting growing commercial
7 nuclear fuel cycle capability.

8 (b) NUCLEAR ENERGY.—

9 (1) IN GENERAL.—Subtitle E of title IX of the
10 Energy Policy Act of 2005 (42 U.S.C. 16271 et
11 seq.) is amended by adding at the end the following:

12 **“SEC. 959A. ADVANCED NUCLEAR FUEL SECURITY PRO-**
13 **GRAM.**

14 **“(a) HIGH-ASSAY, LOW-ENRICHED URANIUM PRO-**
15 **GRAM FOR ADVANCED NUCLEAR REACTORS.—**

16 **“(1) ESTABLISHMENT.—**Not later than 1 year
17 after the date of enactment of this section, the Sec-
18 retary shall establish a program (in this section
19 known as the ‘Program’) to make available high-
20 assay, low-enriched uranium, through contracts for
21 sale, resale, transfer, or lease, for use in advanced
22 nuclear reactors.

23 **“(2) NUCLEAR FUEL OWNERSHIP.—**Each con-
24 tract under paragraph (1) shall include a provision
25 that—

1 “(A) requires that any high-assay, low-en-
2 riched uranium sold, resold, transferred, or
3 leased under such contract shall remain the
4 property of the Secretary; and

5 “(B) the Secretary shall be responsible for
6 the final disposition of all radioactive waste cre-
7 ated by the irradiation, processing, or purifi-
8 cation of any such uranium.

9 “(3) QUANTITY.—In carrying out the Program,
10 the Secretary shall make available—

11 “(A) by December 31, 2022, high-assay,
12 low-enriched uranium containing not less than
13 2 metric tons of the uranium-235 isotope; and

14 “(B) by December 31, 2025, high-assay,
15 low-enriched uranium containing not less than
16 10 metric tons of the uranium-235 isotope,
17 which shall include the quantities of the ura-
18 nium-235 isotope required to be made available
19 under subparagraph (A).

20 “(4) FACTORS FOR CONSIDERATION.—In car-
21 rying out the Program, the Secretary shall take into
22 consideration options for providing high-assay, low-
23 enriched uranium from the stockpile of uranium
24 owned by the Department (including the National

1 Nuclear Security Administration), including by pro-
2 viding from among such stockpile—

3 “(A) fuel that—

4 “(i) directly meets the needs of an
5 end-user; and

6 “(ii) has been previously used or fab-
7 ricated for another purpose;

8 “(B) fuel that can meet the needs of an
9 end-user after removing radioactive contami-
10 nants or other contaminants that resulted from
11 a previous use or fabrication of the fuel for re-
12 search, development, demonstration, or deploy-
13 ment activities of the Department (including ac-
14 tivities of the National Nuclear Security Admin-
15 istration); and

16 “(C) fuel from a high-enriched uranium
17 stockpile, which can be blended with lower-
18 assay uranium to become high-assay, low-en-
19 riched uranium that may be used in an ad-
20 vanced nuclear reactor.

21 “(5) LIMITATION.—The Secretary shall not
22 barter or otherwise sell, resell, or transfer uranium
23 in any form in exchange for services relating to the
24 final disposition of radioactive waste from uranium

1 that is the subject of a sale, lease, release, or trans-
2 fer under this section.

3 “(6) SUNSET.—The Program shall terminate
4 on the earlier of—

5 “(A) January 1, 2035; or

6 “(B) the date on which uranium enriched
7 up to, but not equal to, 20 weight percent can
8 be obtained in the commercial market from do-
9 mestic suppliers, as determined by the Sec-
10 retary.

11 “(b) REPORT.—

12 “(1) IN GENERAL.—Not later than 180 days
13 after the date of enactment of this section, the Sec-
14 retary shall submit to the Committee on Energy and
15 Natural Resources of the Senate and the Committee
16 on Energy and Commerce of the House of Rep-
17 resentatives a report that—

18 “(A) describes the actions the Secretary
19 proposes to carry out under the Program; and

20 “(B) includes—

21 “(i) the estimates under paragraph
22 (3); and

23 “(ii) the evaluations under paragraph
24 (4).

1 “(2) COORDINATION AND STAKEHOLDER
2 INPUT.—In developing the report required under
3 paragraph (1), the Secretary shall seek input from—

4 “(A) the Nuclear Regulatory Commission;

5 “(B) the National Laboratories;

6 “(C) institutions of higher education (as
7 such term is defined in section 101 of the High-
8 er Education Act of 1965 (20 U.S.C. 1001(a)));

9 “(D) a diverse group of entities operating
10 in the nuclear energy industry; and

11 “(E) a diverse group of technology devel-
12 opers.

13 “(3) COST AND SCHEDULE ESTIMATES.—The
14 report required under paragraph (1) shall include es-
15 timated costs, budgets, and timeframes for enabling
16 the use of high-assay, low-enriched uranium.

17 “(4) REQUIRED EVALUATIONS.—The report re-
18 quired under paragraph (1) shall evaluate—

19 “(A) the costs of the actions required to
20 establish and carry out the Program, including
21 with respect to—

22 “(i) proposed preliminary terms for
23 the sale, resale, transfer, and leasing of
24 high-assay, low-enriched uranium (includ-
25 ing guidelines defining the roles and re-

1 sponsibilities of the Department and the
2 purchaser, transfer recipient, or lessee);
3 and

4 “(ii) the potential to coordinate with
5 purchasers, transfer recipients, and lessees
6 regarding—

7 “(I) fuel fabrication; and

8 “(II) fuel transportation;

9 “(B) the potential sources of uranium and
10 fuel forms available to carry out the Program;

11 “(C) options to coordinate carrying out the
12 Program with the operation of the versatile re-
13 actor-based fast neutron source, which is re-
14 quired to be established under section 955(c) of
15 the Energy Policy Act of 2005 (42 U.S.C.
16 16275(c));

17 “(D) the ability of the domestic uranium
18 market to provide materials for advanced nu-
19 clear reactor fuel; and

20 “(E) any associated legal, regulatory, and
21 policy issues that should be addressed to—

22 “(i) carry out the Program; and

23 “(ii) enable the establishment of a do-
24 mestic industry capable of providing high-
25 assay, low-enriched uranium for commer-

1 cial and noncommercial purposes, including
2 with respect to the needs of—

3 “(I) the Department;

4 “(II) the Secretary of Defense;

5 and

6 “(III) the under Secretary of the

7 National Nuclear Security Adminis-

8 tration.

9 “(c) DEFINITIONS.—In this section:

10 “(1) HIGH-ASSAY, LOW-ENRICHED URANIUM.—

11 The term ‘high-assay, low-enriched uranium’ means

12 uranium that is enriched with the uranium-235 iso-

13 tope in an assay weight that is greater than 5 per-

14 cent, but less than 20 percent.

15 “(2) HIGH-ENRICHED URANIUM.—The term

16 ‘high-enriched uranium’ means uranium that is en-

17 riched with the uranium-235 isotope in an assay

18 weight of 20 percent or more.”.

19 (2) TABLE OF CONTENTS.—The table of con-

20 tents of the Energy Policy Act of 2005 (Public Law

21 109–58; 119 Stat. 594) is amended—

22 (A) in the item relating to section 957, by

23 inserting “Sec.” before “957”;

24 (B) in the item relating to section 958, by

25 inserting “Sec.” before “958”;

1 (C) in the item relating to section 959, by
2 inserting “Sec.” before “959”; and

3 (D) by adding after the item relating to
4 section 959 (as amended by this paragraph) the
5 following:

“Sec. 959A. Advanced nuclear fuel security program.”.

6 **SEC. 307. AUTHORIZATION OF APPROPRIATIONS FOR LOAN**
7 **GUARANTEES FOR ADVANCED NUCLEAR FA-**
8 **CILITIES.**

9 Section 1704 of the Energy Policy Act of 2005 (42
10 U.S.C. 16514) is amended by adding at the end the fol-
11 lowing:

12 “(c) **ADVANCED NUCLEAR ENERGY FACILITIES.**—
13 The Secretary is authorized to make guarantees and credit
14 subsidies for advanced nuclear energy facilities under sec-
15 tion 1703(b)(4) for loans of \$10,000,000,000 for each of
16 fiscal years 2021 through 2030, to remain available until
17 expended.”.

18 **SEC. 308. EXPANDING THE PRODUCTION TAX CREDIT FOR**
19 **NUCLEAR POWER.**

20 Section 45J of the Internal Revenue Code of 1986
21 is amended—

22 (1) in subsection (a)(1), by striking “1.8 cents”
23 and inserting “2.7 cents”;

1 (2) in subsection (b)(5)(B)(ii), by striking
2 “6,000 megawatts” and inserting “15,000
3 megawatts”; and

4 (3) in subsection (e), by striking paragraph (1)
5 and redesignating paragraphs (2) and (3) as (1) and
6 (2), respectively.

7 **SEC. 309. AUTHORIZATIONS OF APPROPRIATIONS FOR IN-**
8 **NOVATION IN NUCLEAR POWER.**

9 There are authorized to be appropriated to the Sec-
10 retary \$1,000,000,000 for each of fiscal years 2021
11 through 2030—

12 (1) for Gateway for Accelerated Innovation in
13 Nuclear vouchers;

14 (2) for advanced nuclear technology develop-
15 ment funding opportunity announcements;

16 (3) for advanced small modular reactor research
17 and development;

18 (4) for the advanced reactor demonstration pro-
19 gram; and

20 (5) up to \$60,000,000 for the Nuclear Reactor
21 Innovation Center.

1 **TITLE IV—CLEAN ELECTRICITY**
2 **STANDARD**

3 **SEC. 401. CERTIFICATION OF COST-EFFECTIVE MARKET**
4 **PENETRATION OF CLEAN ELECTRICITY**
5 **TECHNOLOGIES.**

6 Title VI of the Public Utility Regulatory Policies Act
7 of 1978 (16 U.S.C. 2601 et seq.) is amended by adding
8 at the end the following:

9 **“SEC. 610. FEDERAL DECARBONIZATION AND INNOVATION**
10 **ASSESSMENT PROGRAM.**

11 “(a) IN GENERAL.—Not later than 2 years after the
12 date of enactment of this section, the Secretary, after con-
13 sultation with the Administrator of the Environmental
14 Protection Agency, shall establish a program, to be known
15 as the ‘Federal Decarbonization and Innovation Assess-
16 ment Program’, to annually review and monitor progress
17 towards the achievement of—

18 “(1) an 80 percent reduction in annual power
19 sector carbon dioxide emissions, below the level in
20 the year of enactment, by 2050; and

21 “(2) cost-effective market penetration of ad-
22 vanced clean power generation technologies, in ac-
23 cordance with subsection (b).

24 “(b) COST-EFFECTIVE MARKET PENETRATION.—
25 Cost-effective market penetration of advanced clean power

1 generation technologies shall be deemed to have occurred
2 on the date when the Secretary determines that—

3 “(1) at least 3 gigawatts of new electricity gen-
4 erating capacity using any type of eligible technology
5 has come into commercial operation since enactment
6 of this section, provided that—

7 “(A) less than 50 percent of the capital
8 costs of such capacity has been subsidized with
9 Federal funds; and

10 “(B) at least 1 gigawatt of the new elec-
11 tricity generating capacity using eligible tech-
12 nology is coal-fired electricity generation using
13 carbon capture utilization and storage tech-
14 nology; or

15 “(2) at least one type of eligible technology has
16 similar operating characteristics, such as
17 dispatchability upon demand and duty cycle, as ex-
18 isting fossil-fueled electricity generation and, based
19 on data provided by the Energy Information Admin-
20 istration, has a total cost of electricity generation
21 that is not more than 10 percent higher than the av-
22 erage total cost of electricity generation from such
23 existing fossil-fueled electricity generation that has
24 been constructed within the 5 years prior to enact-
25 ment of this section.

1 “(c) CERTIFICATION OF COST-EFFECTIVE MARKET
2 PENETRATION.—Upon making the determination de-
3 scribed under subsection (b), but no earlier than 5 years
4 after enactment of this section, the Secretary shall certify
5 that cost-effective market penetration of advanced clean
6 power generation technologies has occurred.

7 “(d) DEFINITIONS.—In this section:

8 “(1) ADVANCED DISPATCHABLE RENEWABLE
9 GENERATION.—The term ‘advanced dispatchable re-
10 newable generation’ means renewable electricity gen-
11 eration capacity that the Secretary has determined
12 can be used upon demand by grid operators, includ-
13 ing renewable electricity generation facilities that are
14 supported by long-duration energy storage.

15 “(2) ADVANCED NUCLEAR POWER GENERA-
16 TION.—The term ‘advanced nuclear power genera-
17 tion’ means electricity generation capacity using an
18 advanced nuclear reactor, as such term is defined in
19 section 640 of the Energy Policy Act of 2005.

20 “(3) ELIGIBLE TECHNOLOGIES.—The term ‘eli-
21 gible technologies’ means the following types of tech-
22 nologies:

23 “(A) Advanced nuclear power generation.

24 “(B) Advanced dispatchable renewable
25 generation.

1 “(C) Fossil-fueled electricity generation
2 equipped with carbon capture technology, from
3 which at least 90 percent of carbon dioxide out-
4 put is captured and utilized or stored in a man-
5 ner that prevents emission to the atmosphere.”.

6 **SEC. 402. FEDERAL CLEAN ELECTRICITY STANDARD.**

7 Title VI of the Public Utility Regulatory Policies Act
8 of 1978 (16 U.S.C. 2601 et seq.) is further amended by
9 adding after section 610 (as added by this Act) the fol-
10 lowing:

11 **“SEC. 611. FEDERAL CLEAN ELECTRICITY STANDARD.**

12 “(a) CLEAN ELECTRICITY REQUIREMENT.—

13 “(1) DEFINITION OF RETAIL ELECTRICITY SUP-
14 PLIER.—In this section, as determined for each cal-
15 endar year, the term ‘retail electricity supplier’
16 means an entity in the United States that sold not
17 fewer than 20 megawatt-hours of electric energy to
18 electric consumers for purposes other than resale
19 during the preceding calendar year.

20 “(2) IN GENERAL.—Effective beginning in the
21 first compliance period of the program, and for each
22 compliance period thereafter, each retail electricity
23 supplier shall surrender clean electricity credits cor-
24 responding to the required percentage, as deter-

1 mined under paragraph (3), of the electric energy it
2 sells to electric consumers.

3 “(3) DETERMINATION OF REQUIRED PERCENT-
4 AGE.—The Secretary shall determine, and may ad-
5 just as needed, the required percentage for each
6 compliance period, such that the power sector
7 achieves, by 2050, a reduction in carbon dioxide
8 emissions of 80 percent from emission levels in the
9 year of enactment of this section, and that carbon
10 dioxide emission levels are reduced linearly in each
11 compliance period through 2050, provided that—

12 “(A) in 2026, the Secretary shall make a
13 projection of the electricity generated in 2030
14 that could qualify for clean electricity credits
15 under subsection (d);

16 “(B) the required percentage for the first
17 compliance period shall be the greater of—

18 “(i) the percentage of electricity gen-
19 erated that would qualify for issuance of
20 clean electricity credits under subsection
21 (d) in the year of enactment of this sec-
22 tion; and

23 “(ii) the Secretary’s projection for
24 2030 under subparagraph (A); and

1 “(C) the required percentage shall be uni-
2 form for each retail electric supplier regulated
3 under this section for any compliance period.

4 “(4) EARLY PROJECTION OF REQUIRED PER-
5 CENTAGE TO PROMOTE COMPLIANCE PLANNING.—
6 Not later than two years after the date of enactment
7 of this section, the Secretary shall make a projection
8 of the required percentage for the first compliance
9 period, extrapolating from the prior five years of
10 electricity generation.

11 “(b) COMPLIANCE.—A retail electric supplier shall
12 meet the requirements of subsection (a) for each compli-
13 ance period by—

14 “(1) submitting to the Secretary a number of
15 clean electricity credits equal to the product of the
16 required percentage for the compliance period times
17 the volume of electric energy the retail electric sup-
18 plier sold to consumers during the compliance pe-
19 riod;

20 “(2) paying an amount equal to the product of
21 the alternative compliance payment, in the amount
22 specified in subsection (h), times the number of
23 clean electricity credits that would otherwise be due
24 under paragraph (1) in the compliance period; or

1 “(3) taking a combination of the actions de-
2 scribed in paragraphs (1) and (2).

3 “(c) FEDERAL CLEAN ELECTRICITY CREDIT TRAD-
4 ING PROGRAM.—

5 “(1) ESTABLISHMENT.—Not later than 180
6 days after the program trigger date, the Secretary
7 shall establish a Federal clean electricity credit ac-
8 counting and trading program under which clean
9 electricity credits may be acquired, sold, transferred,
10 and held and electric utilities may submit to the Sec-
11 retary clean electricity credits to comply with the re-
12 quirements of this section.

13 “(2) CLEAN ELECTRICITY CREDITS.—Each
14 year, the Secretary shall issue to each generator of
15 electric energy a quantity of clean electricity credits
16 determined in accordance with subsection (d).

17 “(3) ADMINISTRATION.—Each clean electricity
18 credit issued under this subsection shall be used only
19 once for the purpose of complying with the require-
20 ments of this section.

21 “(4) DELEGATION OF PROGRAM ADMINISTRA-
22 TION.—In carrying out this subsection, the Sec-
23 retary may delegate—

1 “(A) to the Commission, the implementa-
2 tion of some or all of the program established
3 under paragraph (1); and

4 “(B) to appropriate entities, the tracking
5 of clean electricity credits.

6 “(5) BANKING OF CLEAN ELECTRICITY CRED-
7 ITS.—Clean electricity credits issued under sub-
8 section (d) shall be valid for the compliance period
9 in which the clean electricity credit is issued or in
10 any subsequent compliance period.

11 “(d) ISSUANCE OF CLEAN ELECTRICITY CREDITS.—

12 “(1) IN GENERAL.—For each calendar year,
13 starting with the year of the program effective date,
14 the Secretary shall issue clean electricity credits to
15 each electricity generator in the United States that
16 has sold electricity and has an annual carbon inten-
17 sity of less than 0.825 metric tons per megawatt-
18 hour.

19 “(2) DETERMINATION OF CREDITS ISSUED.—

20 The number of clean electricity credits issued under
21 paragraph (1) shall be equal to the product of—

22 “(A) the number of megawatt-hours of
23 electric energy sold from the electricity gener-
24 ator; and

1 “(B) 1.0 minus the quotient obtained by
2 dividing—

3 “(i) the annual carbon intensity of the
4 generator, as determined in accordance
5 with paragraph (3), expressed in metric
6 tons per megawatt-hour; by

7 “(ii) 0.82.

8 “(3) DETERMINATION OF ANNUAL CARBON IN-
9 TENSITY OF GENERATING FACILITIES.—With re-
10 spect to paragraph (2)(B)(i), the Secretary shall de-
11 termine, in consultation with the Administrator of
12 the Environmental Protection Agency, the annual
13 carbon intensity of each generator by dividing—

14 “(A) the net annual carbon dioxide emis-
15 sions of the generator; by

16 “(B) the annual quantity of electric energy
17 generated and sold by the generator.

18 “(e) DYNAMIC CREDITING.—If the Secretary ap-
19 proves use of a dynamic crediting methodology or meth-
20 odologies under section 612(c), the Secretary shall imple-
21 ment such methodology or methodologies in lieu of the
22 crediting methodology established under subsection (d)(2)
23 as a means of issuing clean electricity credits.

24 “(f) CIVIL PENALTIES.—

1 “(1) IN GENERAL.—Subject to paragraph (2), a
2 retail electric supplier that fails to meet the require-
3 ments to submit clean electricity credits or make al-
4 ternative compliance payments as required by sub-
5 section (b) shall be subject to a civil penalty in an
6 amount equal to the product obtained of—

7 “(A) the number of megawatt-hours of
8 electric energy sold by the retail electric sup-
9 plier to electric consumers in violation of sub-
10 section (b); and

11 “(B) 200 percent of the value of the appli-
12 cable alternative compliance payment as deter-
13 mined under subsection (h).

14 “(2) PROCEDURE FOR ASSESSING PENALTY.—
15 The Secretary shall assess a civil penalty under this
16 subsection in accordance with the procedures for as-
17 sessing a penalty against a person under section
18 333(d) of the Energy Policy and Conservation Act
19 (42 U.S.C. 6303(d)).

20 “(g) SAVINGS PROVISION.—Nothing in this section
21 affects the authority of a State, or a political subdivision
22 of a State, to adopt or enforce any law relating to—

23 “(1) clean electricity or renewable energy;

24 “(2) carbon dioxide emissions; or

25 “(3) the regulation of a retail electric supplier.

1 “(h) ALTERNATIVE COMPLIANCE PAYMENT.—

2 “(1) INITIAL AMOUNT.—The alternative compli-
3 ance payment for the first year of the first compli-
4 ance period shall be \$30 per megawatt hour.

5 “(2) ANNUAL ADJUSTMENTS TO ALTERNATIVE
6 COMPLIANCE PAYMENT.—For each year after the
7 first year of the first compliance period, the Sec-
8 retary shall increase the amount of the alternative
9 compliance payment from the amount for the prior
10 year by 5 percent. The Secretary may make an addi-
11 tional annual adjustment to account for inflation, as
12 the Secretary may determine necessary.

13 “(i) REGULATIONS.—Not later than 1 year after the
14 date of enactment of this section, the Secretary shall pro-
15 mulgate regulations to implement this section.

16 “(j) DEFINITIONS.—In this section:

17 “(1) COMPLIANCE PERIOD.—The term ‘compli-
18 ance period’ means the 3-year period starting on the
19 program effective date and each 3-year period there-
20 after until 2050.

21 “(2) PROGRAM TRIGGER DATE.—The term ‘pro-
22 gram trigger date’ means January 1 of the first cal-
23 endar year after the Secretary issues the certifi-
24 cation under section 610(c).

1 “(3) PROGRAM EFFECTIVE DATE.—The term
2 ‘program effective date’ means the earlier of—

3 “(A) January 1 of the first calendar year
4 that starts two years after the program trigger
5 date; or

6 “(B) January 1 of the first calendar year
7 that is more than 10 years after the date of en-
8 actment of this section.

9 **“SEC. 612. USE OF DYNAMIC CREDITING TO ISSUE CLEAN**
10 **ELECTRICITY CREDITS.**

11 “(a) IDENTIFICATION OF DYNAMIC CREDITING
12 METHODOLOGIES.—Not later than 2 years after the date
13 of enactment of this section, the Secretary, in consultation
14 with the Administrator of the Environmental Protection
15 Agency, shall identify methodologies for calculating the
16 carbon dioxide emissions from electricity generating re-
17 sources that are avoided or displaced by increasing the
18 generation from generating facilities eligible to receive
19 clean electricity credits under section 611(d). In carrying
20 out this subsection, the Secretary shall—

21 “(1) identify methodologies that estimate in an
22 accurate manner the net carbon dioxide emissions
23 avoided or displaced due to the electricity generated
24 by each specific generating facility in each genera-
25 tion dispatch interval; and

1 “(2) identify such a methodology or methodolo-
2 gies, as appropriate for generation resources located
3 within the region served by a regional transmission
4 organization or independent system operator, as de-
5 fined in section 3 of the Federal Power Act (16
6 U.S.C. 796), and for generation resources operating
7 outside such regions.

8 “(b) COMMISSION REVIEW OF DYNAMIC CREDITING
9 METHODOLOGIES.—

10 “(1) The Secretary shall share the identified
11 dynamic crediting methodologies with the Commis-
12 sion.

13 “(2) Not later than 120 days after its receipt
14 of the dynamic crediting methodologies from the
15 Secretary, the Commission shall hold a technical
16 conference in partnership with State electric utility
17 regulators to evaluate the dynamic crediting meth-
18 odologies, including evaluation of alternatives.

19 “(3) Not later than 180 days after the technical
20 conference held pursuant to paragraph (2), and
21 after providing an opportunity for public comment,
22 the Commission shall provide a report to the Sec-
23 retary on the technical conference and any Commis-
24 sion recommendations or evaluation concerning dy-
25 namic crediting methodologies.

1 “(c) DETERMINATION.—No later than 180 days fol-
2 lowing receipt of the report provided pursuant to sub-
3 section (b)(3), the Secretary, in consultation with the Ad-
4 ministrators of the Environmental Protection Agency, shall
5 approve use of one or more identified dynamic crediting
6 methodologies to issue clean electricity credits if the Sec-
7 retary determines that such use would—

8 “(1) significantly enhance confidence that a
9 clean electricity standard would achieve the carbon
10 dioxide emission reduction targets set forth in sec-
11 tion 611(a)(2); or

12 “(2) significantly reduce the costs of achieving
13 such targets.

14 “(d) USE OF DYNAMIC CREDITING METHODOLO-
15 GIES.—If the Secretary approves one or more identified
16 dynamic crediting methodologies under subsection (c), the
17 Secretary shall implement the approved methodology to
18 determine the number of clean electricity credits to be
19 issued to an electricity generator in lieu of the method-
20 ology provided in 611(d)(2). The Secretary shall apply a
21 dynamic crediting factor approved under subsection (c) for
22 the first full calendar year after such approval, or for the
23 first year of the first compliance period, whichever is later,
24 except that the Secretary may delay use of approved dy-
25 namic crediting methodologies by one year if the Secretary

1 finds that additional time is needed for the Secretary or
2 the Commission to take actions necessary for implementa-
3 tion under subsection (e).

4 “(e) IMPLEMENTATION.—

5 “(1) The Secretary may, by rule, require that
6 the regional transmission organizations, independent
7 system operators, other balancing authorities, and
8 other appropriate entities provide the Secretary with
9 the information necessary for the Secretary to apply
10 any approved dynamic crediting methodology.

11 “(2) At the request of the Secretary, or upon
12 its own initiative, the Commission shall consider
13 whether changes to tariffs on file under section 205
14 of the Federal Power Act (16 U.S.C. 824d) are nec-
15 essary to implement the requirements of any rule
16 promulgated by the Secretary under paragraph
17 (1).”.

18 **SEC. 403. REGIONAL CLEAN ELECTRICITY PLANNING MOD-**

19 **ELS.**

20 (a) DEVELOPMENT OF PLANNING MODELS AND
21 DATA.—Not later than 2 years after the date of enact-
22 ment this Act, the Secretary shall make available one or
23 more regional electricity planning models and standard-
24 ized sets of data, including potential renewable energy
25 hourly production profiles at all potential locations for re-

1 newable energy deployment, that States can use to develop
2 plans for portfolios of clean electricity resources that are
3 capable of achieving the emission reduction trajectory pro-
4 vided in the clean electricity requirements established
5 under section 611 of the Public Utility Regulatory Policies
6 Act of 1978 at least cost and consistent with the need
7 to maintain reliability.

8 (b) DEVELOPMENT PROCESS.—In making planning
9 models and data available under subsection (a), the Sec-
10 retary shall—

11 (1) solicit planning models and standardized,
12 accurate data sets from the national laboratories
13 and universities;

14 (2) hold jointly with the Commission a technical
15 conference on planning models and standardized
16 data sets, including hourly profiles of renewable en-
17 ergy production at potential deployment locations,
18 and consider the input from such conference in
19 choosing planning models and data sets to make
20 available; and

21 (3) update the planning models and data sets
22 made available from time to time in response to new
23 information.

1 (c) USE OF MODELS BY STATES.—The Secretary
2 shall encourage States to use the models and data sets
3 to—

4 (1) plan collaboratively with other States in the
5 same North American Electric Reliability Corpora-
6 tion reliability region or organized electricity market
7 on least-cost and reliable compliance with the clean
8 electricity standard established under section 611 of
9 the Public Utility Regulatory Policies Act of 1978;
10 and

11 (2) adopt, and from time to time update, multi-
12 State clean electricity resource deployment goals
13 that promote least-cost deployment consistent with
14 maintaining electric reliability.

15 **SEC. 404. STAND-BY EMISSION PERFORMANCE STANDARDS.**

16 (a) ANNUAL REVIEW OF ELECTRIC POWER SECTOR
17 EMISSIONS.—Not later than February 1 of the first year
18 after enactment of this section, and each February 1
19 thereafter, the Secretary, in consultation with the Admin-
20 istrator of the Environmental Protection Agency, shall
21 publish a determination of the annual average level of
22 greenhouse gas emissions from the electric power sector
23 for the prior three calendar years.

24 (b) ENFORCEABILITY.—Emission limitations for car-
25 bon dioxide emissions from fossil fuel-fired power plants

1 established under title I of the of the Clean Air Act (42
2 U.S.C. 7401 et seq.) may be enforced by a State or by
3 the Administrator of the Environmental Protection Agen-
4 cy—

5 (1) before the clean electricity standard pro-
6 gram trigger date, only if—

7 (A) the Secretary, not earlier than 5 years
8 after the date of enactment of this Act, deter-
9 mines under subsection (a) that the 5-year an-
10 nual average level of electric power sector
11 greenhouse gas emissions exceeded the annual
12 average level of such emissions for the pre-
13 ceding 5-year period by at least 6 percent; or

14 (B) the Secretary finds that significantly
15 less than the full amount of funding authorized
16 for programs under this Act has been appro-
17 priated, resulting in substantial limitation to or
18 delay of the technology advancement program
19 elements of this Act; or

20 (2) after the end of a clean electricity standard
21 compliance period, if the clean electricity require-
22 ment is not enforced for the compliance period.

23 (c) CLEAN AIR ACT AUTHORITIES.—Except as pro-
24 vided in this section, neither a State nor the Administrator
25 of the Environmental Protection Agency may enforce any

1 emission limitation for carbon dioxide emissions from fos-
2 sil fuel-fired electric power generating units established
3 under title I of the of the Clean Air Act (42 U.S.C. 7401
4 et seq.).

5 (d) DEFINITIONS.—In this section:

6 (1) COMPLIANCE PERIOD.—The term “compli-
7 ance period” has the meaning given such term in
8 section 611(k)(1) of the Public Utility Regulatory
9 Policies Act of 1978.

10 (2) PROGRAM TRIGGER DATE.—The term “pro-
11 gram trigger date” has the meaning given such term
12 in section 611(k)(2) of the Public Utility Regulatory
13 Policies Act of 1978.

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