II

116TH CONGRESS
1ST SESSION

S. 1359

To amend the Public Utility Regulatory Policies Act of 1978 to establish a market-oriented standard for clean electric energy generation, and for other purposes.

IN THE SENATE OF THE UNITED STATES

MAY 8, 2019

Ms. SMITH (for herself, Mr. HEINRICH, Mr. KAINE, Mr. WHITEHOUSE, and Mr. SCHATZ) introduced the following bill; which was read twice and referred to the Committee on Energy and Natural Resources

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A BILL

To amend the Public Utility Regulatory Policies Act of 1978 to establish a market-oriented standard for clean electric energy generation, and for other purposes.

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

SECTION 1. SHORT TITLE.

This Act may be cited as the ''Clean Energy Standard Act of 2019''.

SEC. 2. FEDERAL CLEAN ENERGY STANDARD.

(a) IN GENERAL.—Title VI of the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. 2601 et seq.) is amended by adding at the end the following:

"SEC. 610. FEDERAL CLEAN ENERGY STANDARD.

''(a) PURPOSE.—The purpose of this section is to establish a technology-neutral, market-oriented standard for electric energy generation that—

''(1) stimulates clean energy innovation and allows the United States to achieve a net-zero emission electric sector at the lowest cost;

''(2) will guide power sector investment and provide regulatory certainty, while helping to ensure that the United States is the leader and dominant competitor in the global clean energy transition; and

''(3) will result in—

''(A) hundreds of billions of dollars in domestic health and environmental benefits by the mid-21st century; and

''(B) save tens of thousands of lives in the United States.

''(b) DEFINITIONS.—In this section:

''(1) APPLICABLE CARBON INTENSITY.—The term 'applicable carbon intensity' means 0.4 metric tons of carbon dioxide equivalent per megawatt-hour.

''(2) APPLICABLE CLEAN ENERGY PERCENTAGE.—The term 'applicable clean energy percentage', with respect to a retail electricity supplier, means the clean energy percentage applicable to the

retail electricity supplier for the relevant calendar year under subsection (c).

''(3) BASE QUANTITY.—

''(A) IN GENERAL.—The term 'base quantity', with respect to a retail electricity supplier for a calendar year, means the total quantity of electric energy consumed by electric customers of the retail electricity supplier, expressed in megawatt-hours, during the calendar year, including—

''(i) the quantity of electric energy sold by the retail electricity supplier to electric customers for purposes other than resale; and

''(ii) the quantity of behind-the-meter generation consumed by electric consumers served by the retail electricity supplier.

''(B) DETERMINATION.—For purposes of subparagraph (A), not later than 180 days after the date of enactment of this section, the Secretary shall develop appropriate processes for determining the quantity of behind-the-meter generation consumed by electric consumers served by a retail electricity supplier, including by requiring from the retail electricity

supplier relevant documentation of behind-the-meter electric energy consumption, such as records associated with net-metering.

''(4) BASELINE PERCENTAGE.—The term 'baseline percentage' means—

''(A) for a retail electricity supplier in operation on the date of enactment of this section, the clean energy percentage of the retail electricity supplier calculated for the calendar year in which this section is enacted; and

''(B) for a retail electricity supplier that commences operation after the date of enactment of this section, such clean energy percentage as the Secretary determines to be appropriate.

''(5) BEHIND-THE-METER GENERATION.—The term 'behind-the-meter generation' means the generation of clean energy using a system that operates on the customer side of the applicable utility meter, subject to the condition that the retail electricity supplier serving the generator shall submit to the Secretary, not less frequently than annually, verification of the quantity of that generation in such form, in such manner, and containing such information as the Secretary may require.

''(6) CARBON DIOXIDE EQUIVALENT.—

''(A) IN GENERAL.—The term 'carbon dioxide equivalent' means the number of metric tons of carbon dioxide emissions with the same global warming potential over a 100-year period as 1 metric ton of another greenhouse gas.

''(B) GLOBAL WARMING POTENTIAL.—For purposes of subparagraph (A), global warming potential shall be determined in accordance with the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.

''(7) CARBON INTENSITY.—The term 'carbon intensity' means the carbon dioxide equivalent emissions associated with the generation of 1 megawatt-hour of electric energy by a generator.

''(8) CLEAN ENERGY.—The term 'clean energy' means electric energy that is—

''(A) generated at a facility using—

''(i) renewable energy;

''(ii) qualified renewable biomass;

''(iii) hydropower;

''(iv) nuclear power;

''(v) qualified waste-to-energy;

''(vi) qualified low-carbon fuels;

''(vii) a qualified combined heat and power system; or

''(viii) any other source of energy in a manner that ensures that the facility does not exceed the applicable carbon intensity;

''(B) generated at a facility that—

''(i) captures the carbon dioxide from—

''(I) a waste stream of the facility;

''(II) another waste stream; or

''(III) the atmosphere directly; and

''(ii) prevents the release of the captured carbon dioxide into the atmosphere; or

''(C) dispatched from a qualified energy storage system.

''(9) CLEAN ENERGY PERCENTAGE.—

''(A) IN GENERAL.—The term 'clean energy percentage' means the percentage of clean energy consumed by all electric consumers of a retail electricity supplier.

''(B) CALCULATION.—For purposes of subparagraph (A), the clean energy percentage of

a retail electricity supplier shall be equal to the quotient obtained by dividing—

"(i) the sum of—

"(I) the quantity of clean energy sold by the retail electricity supplier to electric consumers; and

"(II) the quantity of behind-the-meter generation consumed by electric consumers served by the retail electricity supplier; by

"(ii) the base quantity of the retail electricity supplier.

"(C) DETERMINATION.—

"(i) IN GENERAL.—For purposes of subparagraph (B), not later than 180 days after the date of enactment of this section, the Secretary shall develop a process for determining the quantities of—

"(I) clean energy sold by a retail electricity supplier to electric consumers, taking into account—

"(aa) the need to quantify, without double counting, appropriate quantities of clean energy—

"(AA) owned by the retail electricity supplier;

"(BB) obtained by the retail electricity supplier through power purchase agreements;

"(CC) imported by the retail electricity supplier;

"(DD) purchased by the retail electricity supplier from wholesale markets; and

"(EE) purchased by the retail electricity supplier through existing renewable or clean energy credits and certificates; and

"(bb) appropriate differences between—

"(AA) retailers operating in organized wholesale markets; and

"(BB) retailers operating in vertically integrated market contexts; and

''(II) behind-the-meter generation consumed by electric consumers served by a retail electricity supplier, including by requiring from the retail electricity supplier relevant documentation of behind-the-meter electric energy consumption, such as records associated with net-metering.

''(ii) QUANTIFYING CLEAN ENERGY.—For purposes of quantifying clean energy and behind-the-meter generation under clause (i), the Secretary shall use the methods used to assign a quantity of credits to generators under subsection (f).

''(10) DISPATCHABLE LOW-EMISSION TECHNOLOGY.—The term 'dispatchable low-emission technology' means a generator that uses a technology or combination of technologies that—

''(A) has a carbon intensity of not more than 0.05 metric tons of carbon dioxide equivalent per megawatt-hour;

''(B) has the ability, at any time, to start, increase, decrease, and stop energy production on demand;

"(C) is placed into service after the date of enactment of this section; and

"(D) is not a dispatchable zero-emission technology.

"(11) DISPATCHABLE ZERO-EMISSION TECHNOLOGY.—The term 'dispatchable zero-emission technology' means a generator that uses a technology or combination of technologies that—

"(A) has a carbon intensity of zero;

"(B) has the ability, at any time, to start, increase, decrease, and stop energy production on demand; and

"(C) is placed into service after the date of enactment of this section.

"(12) ENERGY STORAGE SYSTEM.—The term 'energy storage system' means any equipment or facility relating to the electric grid that—

"(A) is capable of absorbing energy, storing the energy for a period of time, and dispatching the energy as electric energy; and

"(B) uses mechanical, electrochemical, biochemical, or thermal processes—

"(i) to store energy generated at an earlier time for use at a later time; or

"(ii) to store energy generated from a mechanical process that would otherwise be wasted for delivery at a later time.

"(13) FEDERAL CLEAN ENERGY CREDIT.—The term 'Federal clean energy credit' means a credit issued pursuant to subsection (e).

"(14) GENERATOR.—The term 'generator' means a unit or system of units that—

"(A) generates not fewer than 20 megawatt-hours of electric energy per calendar year;

"(B) delivers electric energy to the grid; and

"(C) is located in the United States.

"(15) LIFECYCLE GREENHOUSE GAS EMISSIONS.—The term 'lifecycle greenhouse gas emissions' means the aggregate quantity of carbon dioxide equivalent emissions relating to the full lifecycle of electric energy production, including—

"(A) extraction, production, and distribution of fuels and materials for physical capital;

"(B) power generation and transmission; and

"(C) handling and disposal of waste, byproducts, and end-of-life materials.

''(16) QUALIFIED COMBINED HEAT AND POWER SYSTEM.—The term 'qualified combined heat and power system' means a system that—

''(A) uses the same energy source for the simultaneous or sequential generation of electrical energy and thermal energy;

''(B) produces at least—

''(i) 20 percent of the useful energy of the system in the form of electricity; and

''(ii) 20 percent of the useful energy in the form of useful thermal energy;

''(C) to the extent that the system uses biomass, uses only qualified renewable biomass; and

''(D) operates with an energy efficiency percentage, as determined in accordance with section 48(c)(3)(C)(i) of the Internal Revenue Code of 1986, of greater than 50 percent.

''(17) QUALIFIED DISPATCHABLE.—

''(A) IN GENERAL.—The term 'qualified dispatchable' means—

''(i) with respect to a dispatchable low-emission technology, a dispatchable low-emission technology that—

"(I) is 1 of the first 5 original demonstrations in the United States of a particular innovative technology providing not less than 20 megawatts of electric energy generation capacity;

"(II) generates revenue from the sale of electric energy; and

"(III) is placed into service before January 1, 2030; and

"(ii) with respect to a dispatchable zero-emission technology, means a dispatchable zero-emission technology that—

"(I) is 1 of the first 5 original demonstrations in the United States of a particular innovative technology providing not less than 20 megawatts of electric energy generation capacity;

"(II) generates revenue from the sale of electric energy; and

"(III) is placed into service before January 1, 2040.

"(B) DETERMINATION.—For purposes of determining whether a dispatchable low-emission technology or dispatchable zero-emission technology is an original demonstration of an

innovative technology under clause (i)(I) or (ii)(I), respectively, of subparagraph (A), the Secretary shall—

"(i) develop a process that—

"(I) ensures that each innovative technology exhibits a significant technical or economic advancement, as compared to existing technologies; and

"(II) includes consideration of an application submitted to the Secretary by the owner of the dispatchable low-emission technology or dispatchable zero-emission technology;

"(ii) not later than 90 days after the date of submission of an application under clause (i)(II), make a determination regarding whether to approve the application; and

"(iii) subject to subparagraph (C), provide to each owner, the application of which is approved under clause (ii), a certification—

"(I) that the applicable generator is a qualified dispatchable low-emis-

sion technology or dispatchable zero-emission technology; and

"(II) that shall be surrendered to earn Federal clean energy credits under subsection (f)(10).

"(C) TERMINATION OF CERTIFICATION.—Except as otherwise provided by the Secretary, a certification provided under subparagraph (B)(iii) shall cease to have any force or effect if the Secretary determines that construction of the applicable generator—

"(i) does not commence by the date that is 2 years after the date of certification; or

"(ii) has been suspended indefinitely.

"(18) QUALIFIED ENERGY STORAGE SYSTEM.—The term 'qualified energy storage system' means an energy storage system that stores clean energy—

"(A) that would otherwise be wasted or curtailed;

"(B) with verifiable carbon intensity that does not exceed the applicable carbon intensity; and

"(C) for which no Federal clean energy credit is issued.

''(19) QUALIFIED GENERATION.—The term 'qualified generation' means the number of megawatt-hours of electric energy that a generator—

''(A)(i) generates; or

''(ii) generates and stores using a connected energy storage system; and

''(B)(i) sells for resale;

''(ii) if the generator is owned by a retail electricity supplier, sells to electric consumers; or

''(iii) if the generator is a behind-the-meter generation system, consumes onsite for a useful purpose.

''(20) QUALIFIED LOW-CARBON FUEL.—

''(A) IN GENERAL.—The term 'qualified low-carbon fuel' means a fuel used to generate electric energy that—

''(i) is produced through any process (but not including any processes that use electric energy as an input) that significantly limits or avoids greenhouse gas emissions; and

''(ii) does not release greenhouse gas or other pollutant emissions during combustion.

"(B) INCLUSION.—The term 'qualified low-carbon fuel' includes—

"(i) ammonia; and

"(ii) hydrogen.

"(21) QUALIFIED RENEWABLE BIOMASS.—The term 'qualified renewable biomass' means—

"(A) any crop byproduct or crop residue harvested from actively managed or fallow agricultural land that is cleared before the date of enactment of this section, if the harvesting of the residue does not lead to a net decline in soil organic matter for the applicable land;

"(B) any planted tree, brush, slash, or residue from an actively managed tree farm dedicated to energy crop production and located on forest land established for planted tree crop production before the date of enactment of this section;

"(C) any brush, slash, or residue from an actively managed forest that is certified to achieve compliance with applicable—

"(i) sustainability standards of the Forest Stewardship Council; or

''(ii) standards endorsed by the Programme for the Endorsement of Forest Certification, including—

''(I) the Sustainable Forestry Initiative; and

''(II) the American Tree Farm System;

''(D) algae;

''(E) nonhazardous plant matter derived from landscape right-of-way trimmings; and

''(F) vegetative matter removed from an area located not more than 200 yards from a building, residence, or campground for the purpose of hazardous fuels management.

''(22) QUALIFIED WASTE-TO-ENERGY.—The term 'qualified waste-to-energy' means energy produced—

''(A) from the combustion of—

''(i) post-recycled municipal solid waste;

''(ii) gas produced from the gasification or pyrolization of post-recycled municipal solid waste;

''(iii) biogas;

''(iv) landfill methane;

''(v) animal waste or animal byproducts;

''(vi) food waste;

''(vii) wood, paper products that are not commonly recyclable, and vegetation (including trees and trimmings, yard waste, pallets, railroad ties, crates, and solid-wood manufacturing and construction debris), if diverted from or separated from other waste out of a municipal waste stream; or

''(viii) any byproduct of a wood or paper mill operation, including lignin in spent pulping liquors; and

''(B) at a facility that the Secretary has certified, on an annual basis, is in compliance with all applicable Federal and State environmental permits, including—

''(i) in the case of a facility that commences operation before the date of enactment of this section, compliance with emission standards under sections 112 and, as applicable, 129 of the Clean Air Act (42 U.S.C. 7412, 7429) that apply as of the date of enactment of this section to new

facilities within the applicable source category; and

''(ii) in the case of a facility that produces electric or thermal energy from the combustion, pyrolization, or gasification of municipal solid waste, certification that each local government unit from which the waste originates operates, participates in the operation of, contracts for, or otherwise provides for recycling services for residents of the local government unit.

''(23) RENEWABLE ENERGY.—The term 'renewable energy' means solar, wind, ocean, current, wave, tidal, or geothermal energy.

''(24) RETAIL ELECTRICITY SUPPLIER.—

''(A) IN GENERAL.—The term 'retail electricity supplier', as determined for each calendar year, means an entity in the United States that sold not fewer than 20 megawatt-hours of electric energy to electric consumers for purposes other than resale during the preceding calendar year.

''(B) INCLUSIONS AND LIMITATIONS.—For purposes of making a determination under subparagraph (A) with respect to an entity—

"(i) any sale of electric energy made by an affiliate of the entity to an electric consumer (other than to a lessee or tenant of the affiliate) for purposes other than resale may be considered to be a sale made by the entity; and

"(ii) any sale of electric energy made by the entity to an affiliate, lessee, or tenant of the entity shall not be considered to be a sale to an electric consumer.

"(C) AFFILIATE.—For purposes of subparagraph (B), the term 'affiliate', with respect to an entity, means an individual or entity that directly or indirectly owns or controls, is owned or controlled by, or is under common ownership or control with, the entity, as determined in accordance with applicable regulations of the Secretary.

"(c) CLEAN ENERGY REQUIREMENT.—

"(1) IN GENERAL.—Beginning in the second full calendar year beginning after the date of enactment of this section, and each calendar year thereafter, each retail electricity supplier shall sell a quantity of clean energy equal to the product obtained by multiplying—

"(A) the applicable clean energy percentage determined for the retail electricity supplier for the calendar year under paragraph (2); and

"(B) the base quantity of the retail electricity supplier for the applicable calendar year.

"(2) DETERMINATION OF APPLICABLE CLEAN ENERGY PERCENTAGES.—

"(A) INITIAL PERCENTAGE.—

"(i) USE OF BASELINE PERCENTAGE.—For purposes of the determinations required under subparagraphs (B) and (C), the applicable clean energy percentage for a retail electricity supplier for the calendar year during which this section is enacted shall be the baseline percentage of the retail electricity supplier.

"(ii) NEW RETAIL ELECTRICITY SUPPLIERS.—For purposes of the determinations required under subparagraphs (B) and (C), for a retail electricity supplier that is established after the date of enactment of this section, the Secretary shall determine the appropriate applicable clean energy percentage for the first calendar year beginning after the date on which the

retail electricity supplier commences operation.

''(B) SUBSEQUENT DETERMINATIONS.—Subject to paragraph (3), for the first calendar year beginning after the date of enactment of this section and each calendar year thereafter until the calendar year for which the applicable clean energy percentage for a retail electricity supplier is 90 percent, the applicable clean energy percentage for the retail electricity supplier under paragraph (1) shall be—

''(i) in the case of a retail electricity supplier with not less than 2,000,000 megawatt-hours of retail electric energy sales during the calendar year in which this section is enacted, or a retail electricity supplier with less than 2,000,000 megawatt-hours of retail electric energy sales during that calendar year but more than 2,000,000 megawatt-hours of retail electric energy sales during a subsequent calendar year due to a merger or the acquisition of additional territory, the applicable clean energy percentage for the retail

electricity supplier for the preceding calendar year, as increased—

"(I) for any calendar year for which the applicable clean energy percentage of the retail electricity supplier is not more than 60 percent, by the fast growth rate for the calendar year, as determined under paragraph (3)(B); and

"(II) for any calendar year for which the applicable clean energy percentage of the retail electricity supplier is more than 60 percent, by the slow growth rate for the calendar year, as determined under paragraph (3)(C), up to a maximum of 90 percent; and

"(ii) in the case of a retail electricity supplier not described in clause (i), the applicable clean energy percentage for the retail electricity supplier for the preceding calendar year, as increased by the small growth rate for the calendar year, as determined under paragraph (3)(D), up to a maximum of 90 percent.

''(C) FINAL TARGET PERCENTAGE.—Effective beginning in calendar year 2040, for each calendar year beginning after the first calendar year for which the applicable clean energy percentage of a retail electricity supplier under subparagraph (B) is 90 percent, the applicable clean energy percentage for the retail electricity supplier under paragraph (1) shall be increased by 1 percentage point, up to a maximum of 100 percent.

''(3) RATE INCREASE ADJUSTMENTS.—

''(A) DEFINITIONS.—In this paragraph:

''(i) RATE DECREASE-ADJUSTED CALENDAR YEAR.—The term 'rate decrease-adjusted calendar year' means any calendar year beginning after a calendar year for which alternative compliance payments accounted for greater than 10 percent of total compliance obligations of all retail electricity providers under subsection (d) for that calendar year.

''(ii) RATE INCREASE-ADJUSTED CALENDAR YEAR.—The term 'rate increase-adjusted calendar year' means any calendar year beginning after a 2-consecutive cal-

endar year period during which, for each of those 2 consecutive calendar years, the average price of a Federal clean energy credit for the 3 preceding calendar years was below the rate-increased floor price.

"(iii) RATE-INCREASED FLOOR PRICE.—The term 'rate-increased floor price' means the difference between—

"(I) the alternative compliance payment for the applicable calendar year; and

"(II)(aa) during the period beginning on the date of enactment of this section and ending on December 31 of the second full calendar year beginning after that date of enactment, a rate of 1.5 cents per kilowatt-hour; and

"(bb) for each calendar year thereafter, the rate described in item (aa) for the preceding calendar year—

"(AA) increased by 3 percent; and

"(BB) adjusted for inflation, as the Secretary determines to be necessary.

"(B) FAST GROWTH RATE.—For purposes of paragraph (2)(B)(i)(I), the fast growth rate shall be—

"(i) for the calendar year in which this section is enacted, 2.75 percentage points;

"(ii) for the first calendar year beginning after the date of enactment of this section and each calendar year thereafter that is not a rate increase-adjusted calendar year or a rate decrease-adjusted calendar year, the fast growth rate for the preceding calendar year;

"(iii) for a rate increase-adjusted calendar year, the fast growth rate for the preceding calendar year, increased by 0.5 percentage points; and

"(iv) for a rate decrease-adjusted calendar year, the fast growth rate for the preceding calendar year, decreased by 0.25 percentage points, down to a minimum of 2.75 percentage points.

''(C) SLOW GROWTH RATE.—For purposes of paragraph (2)(B)(i)(II), the slow growth rate shall be—

''(i) for the calendar year in which this section is enacted, 1.75 percentage points;

''(ii) for the first calendar year beginning after the date of enactment of this section and each calendar year thereafter that is not a rate increase-adjusted calendar year or a rate decrease-adjusted calendar year, the slow growth rate for the preceding calendar year;

''(iii) for a rate increase-adjusted calendar year, the slow growth rate for the preceding calendar year, increased by 0.5 percentage points; and

''(iv) for a rate decrease-adjusted calendar year, the slow growth rate for the preceding calendar year, decreased by 0.25 percentage points, down to a minimum of 1.75 percentage points.

''(D) SMALL GROWTH RATE.—For purposes of paragraph (2)(B)(ii), the small growth rate shall be—

"(i) for the calendar year in which this section is enacted, 1.5 percentage points;

"(ii) for the first calendar year beginning after the date of enactment of this section and each calendar year thereafter that is not a rate increase-adjusted calendar year or a rate decrease-adjusted calendar year, the small growth rate for the preceding calendar year;

"(iii) for a rate increase-adjusted calendar year, the small growth rate for the preceding calendar year, increased by 0.5 percentage points; and

"(iv) for a rate decrease-adjusted calendar year, the small growth rate for the preceding calendar year, decreased by 0.25 percentage points, down to a minimum of 1.5 percentage points.

"(d) MEANS OF COMPLIANCE.—

"(1) IN GENERAL.—A retail electricity supplier shall annually achieve compliance with subsection (c) by—

"(A) submitting to the Secretary Federal clean energy credits;

"(B) submitting to the Secretary documentation of the quantity of behind-the-meter generation consumed by electric consumers served by the retail electricity supplier;

"(C) making alternative compliance payments of 3 cents per kilowatt-hour in accordance with subsection (i); or

"(D) taking a combination of actions described in subparagraphs (A) through (C).

"(2) FAILURE TO ESTABLISH FEDERAL CLEAN ENERGY CREDIT TRADING PROGRAM.—If the Secretary does not establish a Federal clean energy credit trading program under subsection (e), a retail electricity supplier shall achieve compliance with subsection (c) by—

"(A) submitting to the Secretary documentation of the clean energy percentage of the retail electricity supplier;

"(B) making alternative compliance payments of 3 cents per kilowatt-hour in accordance with subsection (i); or

"(C) taking a combination of actions described in subparagraphs (A) and (B).

"(e) FEDERAL CLEAN ENERGY CREDIT TRADING PROGRAM.—

''(1) ESTABLISHMENT.—Not later than 1 year after the date of enactment of this section, the Secretary shall establish a Federal clean energy credit trading program under which—

''(A) 1 Federal clean energy credit represents 1 megawatt-hour of clean energy generated by a generator;

''(B) retail electricity suppliers may submit to the Secretary Federal clean energy credits to certify compliance by the retail electricity suppliers with subsection (c); and

''(C) those Federal clean energy credits are issued, recorded, tracked, and transferred.

''(2) CLEAN ENERGY CREDITS.—Except as provided in subparagraphs (B) and (C) of paragraph (3), the Secretary shall issue to each generator and qualified energy storage system a quantity of Federal clean energy credits determined in accordance with subsections (f) and (g).

''(3) ADMINISTRATION.—In carrying out the program under this subsection, the Secretary shall ensure that—

''(A) a Federal clean energy credit may be—

''(i) used only once for purposes of compliance with this section; and

''(ii) purchased only by a retail electricity supplier;

''(B) a Federal clean energy credit issued for clean energy generated and sold for resale under a contract in effect on the date of enactment of this section shall be issued to the purchasing retail electricity supplier, unless otherwise provided by the contract; and

''(C) with respect to clean energy generated in a facility outside of the United States, a Federal clean energy credit may be issued only—

''(i) if the clean energy is sold for resale in the United States; and

''(ii) to the purchasing retail electricity supplier.

''(4) DELEGATION OF MARKET FUNCTION.—

''(A) IN GENERAL.—In carrying out the program under this subsection, the Secretary may delegate—

''(i) to 1 or more appropriate entities (including any Federal entity in existence on the date of enactment of this section),

the administration of a national Federal clean energy credit market for purposes of establishing a transparent national market for the sale or trade of Federal clean energy credits; and

''(ii) to appropriate entities, the tracking of dispatch of clean energy generation.

''(B) ADMINISTRATION.—In making a delegation under subparagraph (A)(ii), the Secretary shall ensure that the tracking and reporting of information concerning the dispatch of clean energy generation is transparent, verifiable, and independent of any generation or load interests subject to an obligation under this section.

''(5) BANKING OF FEDERAL CLEAN ENERGY CREDITS.—

''(A) IN GENERAL.—Subject to subparagraph (B), for purposes of achieving compliance with subsection (c), a Federal clean energy credit shall be valid for—

''(i) the calendar year during which the Federal clean energy credit is issued; or

''(ii) either of the 2 subsequent calendar years.

''(B) ADJUSTMENTS.—

''(i) CALENDAR YEARS 2040 THROUGH 2049.—For each of calendar years 2040 through 2049, a Federal clean energy credit shall be valid for—

''(I) the calendar year during which the Federal clean energy credit is issued; or

''(II) the subsequent calendar year.

''(ii) CALENDAR YEAR 2050 AND THEREAFTER.—Beginning in calendar year 2050, a Federal clean energy credit shall be valid only for the calendar year during which the Federal clean energy credit is issued.

''(f) DETERMINATION OF QUANTITY OF CREDITS.—

''(1) IN GENERAL.—Except as otherwise provided in this subsection, the quantity of Federal clean energy credits issued to a generator of clean energy shall be equal to the product obtained by multiplying—

''(A) the qualified generation of the generator; and

''(B) the difference between—

''(i) 1.0; and

''(ii) the quotient obtained by dividing—

''(I) the carbon intensity of the generator, as determined in accordance with subsection (g) (expressed in metric tons per megawatt-hour); by

''(II) the applicable carbon intensity.

''(2) QUALIFIED COMBINED HEAT AND POWER SYSTEMS.—

''(A) IN GENERAL.—The quantity of Federal clean energy credits issued to a generator that is a qualified combined heat and power system shall be equal to the difference between—

''(i) the product obtained by multiplying—

''(I) the number of megawatt-hours of electric energy generated by the qualified combined heat and power system; and

"(II) the difference between—

"(aa) 1.0; and

"(bb) the quotient obtained by dividing—

"(AA) the carbon intensity of the generator, as determined in accordance with subsection (g) (expressed in metric tons per megawatt-hour); by

"(BB) the applicable carbon intensity; and

"(ii) the product obtained by multiplying—

"(I) the number of megawatt-hours of electric energy generated by the qualified combined heat and power system that are consumed onsite; and

"(II) the national weighted average of the applicable clean energy percentage required for the calendar year under subsection (c), as determined by the Secretary.

"(B) ADDITIONAL CREDITS.—In addition to Federal clean energy credits issued under

subparagraph (A), the Secretary shall issue Federal clean energy credits to a generator that is a qualified combined heat and power system for greenhouse gas emissions avoided as a result of the use of the qualified combined heat and power system, rather than a separate thermal source, to meet the onsite thermal needs of the generator.

''(3) QUALIFIED RENEWABLE BIOMASS.—

''(A) IN GENERAL.—Subject to subparagraph (B), the quantity of Federal clean energy credits issued to each generator of clean energy using qualified renewable biomass shall be equal to the product obtained by multiplying—

''(i) the qualified generation of the generator using qualified renewable biomass; and

''(ii) the qualified renewable biomass credit value determined under subsection (g)(4)(B)(iii).

''(B) EXISTING GENERATORS.—For generators placed into service before the date of enactment of this section, the quantity of Federal clean energy credits issued to each generator of

energy using qualified renewable biomass shall be equal to the greater of—

"(i) the product obtained by multiplying—

"(I) the qualified generation of the generator, not to exceed the generation capacity of the generator on the date of enactment of this section; and

"(II) 0.5; and

"(ii) the quantity of credits determined under subparagraph (A).

"(4) QUALIFIED WASTE-TO-ENERGY.—

"(A) IN GENERAL.—Subject to subparagraph (B), the quantity of Federal clean energy credits issued to a generator that is a qualified waste-to-energy facility shall be equal to the product obtained by multiplying—

"(i) the qualified generation of the generator using qualified waste-to-energy; and

"(ii) the qualified waste-to-energy credit value determined under subsection (g)(4)(B)(iii).

''(B) EXISTING GENERATORS.—For generators placed into service before the date of enactment of this section, the quantity of Federal clean energy credits issued to each generator of energy that is a qualified waste-to-energy facility shall be equal to the greater of—

''(i) the qualified generation of the generator, not to exceed the generation capacity of the generator on the date of enactment of this section; and

''(ii) the quantity of credits determined under subparagraph (A).

''(5) QUALIFIED LOW-CARBON FUELS.—The quantity of Federal clean energy credits issued to a generator using qualified low-carbon fuels shall be equal to the product obtained by multiplying—

''(A) the qualified generation of the generator using qualified low-carbon-fuels; and

''(B) the qualified low-carbon fuel credit value determined under subsection (g)(4)(B)(iii).

''(6) CARBON CAPTURE, STORAGE, AND UTILIZATION.—

''(A) DEFINITIONS.—In this paragraph, the terms 'qualified carbon oxide', 'qualified en-

hanced oil or natural gas recovery project', and 'tertiary injectant' have the meanings given those terms in section 45Q of the Internal Revenue Code of 1986.

"(B) QUANTITY OF CREDITS.—Except as otherwise provided in this subsection, the quantity of Federal clean energy credits issued to each generator of clean energy through the capture and storage or utilization of qualified carbon oxide from a waste stream of the generator shall be equal to the product obtained by multiplying—

"(i) the qualified generation of the generator; and

"(ii) the difference between—

"(I) 1.0; and

"(II) the quotient obtained by dividing—

"(aa) the carbon intensity of the generator, as determined in accordance with subsection (g) (expressed in metric tons per megawatt-hour); by

"(bb) the applicable carbon intensity.

"(C) ADDITIONAL CREDITS.—In addition to Federal clean energy credits issued under subparagraph (B), the Secretary shall issue Federal clean energy credits to each generator of clean energy through the capture and storage or utilization of qualified carbon oxide from a waste stream other than the waste stream of the generator, or from the atmosphere directly, in a quantity equal to the quotient obtained by dividing—

"(i) the number of metric tons of qualified carbon oxide captured and stored or utilized; by

"(ii) the carbon intensity of the generator, as determined in accordance with subsection (g) (expressed in metric tons per megawatt-hour).

"(D) SPECIAL RULES.—

"(i) REGULATIONS.—

"(I) IN GENERAL.—Subject to subclause (III), not later than 1 year after the date of enactment of this section, the Secretary, in consultation with the Administrator of the Envi-

ronmental Protection Agency, shall promulgate regulations establishing—

"(aa) the conditions under which qualified carbon oxide may be safely and permanently stored for purposes of issuing Federal clean energy credits to a generator under this paragraph; and

"(bb) in accordance with subclause (II), the methods and processes by which qualified carbon oxide may be utilized in a manner that ensures the removal of the qualified carbon oxide safely and permanently from the atmosphere.

"(II) REQUIREMENTS.—For purposes of subclause (I)(bb)—

"(aa) utilization of qualified carbon oxide may include the production of substances, such as plastics and chemicals; and

"(bb) the regulations promulgated pursuant to that subclause shall minimize the escape

or further emission of qualified carbon oxide into the atmosphere.

''(III) EXISTING REQUIREMENTS.—In promulgating regulations pursuant to this clause, the Secretary shall incorporate any existing Federal requirements for the permanent geologic storage of carbon oxides, including any requirements under section 45Q of the Internal Revenue Code of 1986.

''(ii) ADJUSTED QUANTITY.—

''(I) IN GENERAL.—Notwithstanding subparagraphs (B) and (C), except as provided in subclause (II), the quantity of Federal clean energy credits issued under this paragraph to a generator at which qualified carbon oxide is captured and used as a tertiary injectant in a qualified enhanced oil or natural gas recovery project shall be reduced by 50 percent.

''(II) NO REDUCTION.—If the qualified carbon oxide captured and

used as a tertiary injectant in a qualified enhanced oil or natural gas recovery project by a generator achieves compliance with the conditions established pursuant to clause (i)(I)(aa), the quantity of Federal clean energy credits issued to the generator shall not be reduced.

''(7) QUALIFIED ENERGY STORAGE SYSTEMS.—The quantity of Federal clean energy credits issued to each qualified energy storage system shall be equal to the product obtained by multiplying—

''(A) the electric energy dispatched and sold by the qualified energy storage system (expressed in megawatt-hours); and

''(B) the difference between—

''(i) 1.0; and

''(ii) the quotient obtained by dividing—

''(I) the average carbon intensity of the clean energy stored in the qualified energy storage system, as determined in accordance with subsection (g) (expressed in metric tons per megawatt-hour); by

''(II) the applicable carbon intensity.

''(8) NEGATIVE CREDITS.—Notwithstanding any other provision of this subsection, the Secretary shall not issue a negative quantity of Federal clean energy credits to any generator.

''(9) MAXIMUM QUANTITY OF CREDITS.—Notwithstanding paragraphs (1) through (6), the total quantity of Federal clean energy credits issued under those paragraphs to a generator for a calendar year shall not exceed the number of megawatt-hours of the applicable annual qualified generation of the generator.

''(10) INNOVATION MULTIPLIER.—

''(A) IN GENERAL.—Notwithstanding paragraphs (1) through (6), until the applicable date described in subparagraph (C), the quantity of Federal clean energy credits issued under this section to—

''(i) a generator that is a qualified dispatchable low-emission technology or a qualified dispatchable zero-emission technology shall be equal to the product obtained by multiplying—

"(I) the qualified generation of that generator;

"(II) the difference between—

"(aa) 1.0; and

"(bb) the quotient obtained by dividing—

"(AA) the carbon intensity of the generator, as determined in accordance with subsection (g) (expressed in metric tons per megawatt-hour); by

"(BB) the applicable carbon intensity; and

"(III) 1.5;

"(ii) a generator that is a dispatchable zero-emission technology that is not issued Federal clean energy credits under clause (i) shall be equal to the product obtained by multiplying—

"(I) the qualified generation of that generator;

"(II) the difference between—

"(aa) 1.0; and

"(bb) the quotient obtained by dividing—

"(AA) the carbon intensity of the generator, as determined in accordance with subsection (g) (expressed in metric tons per megawatt-hour); by

"(BB) the applicable carbon intensity; and

"(III) the appropriate multiplier, as determined under subparagraph (B)(i); and

"(iii) a generator that is a dispatchable low-emission technology that is not issued Federal clean energy credits under clause (i) shall be equal to the product obtained by multiplying—

"(I) the qualified generation of that generator;

"(II) the difference between—

"(aa) 1.0; and

"(bb) the quotient obtained by dividing—

"(AA) the carbon intensity of the generator, as determined in accordance with subsection (g) (expressed in metric tons per megawatt-hour); by

"(BB) the applicable carbon intensity; and

"(III) the appropriate multiplier, as determined under subparagraph (B)(ii).

"(B) MULTIPLIERS.—The multipliers referred to in clauses (ii)(III) and (iii)(III) of subparagraph (A) are—

"(i) for a dispatchable zero-emission technology described in subparagraph (A)(ii)—

"(I) for the period beginning on the date of enactment of this section and ending on the date on which the total capacity of dispatchable zero-emission technologies in the United States is greater than 5 gigawatts, as determined by the Secretary, 1.25;

"(II) for the period beginning on the day after the date of expiration of the period described in subclause (I) and ending on the date on which the total capacity of dispatchable zero-emission technologies in the United States is greater than 10 gigawatts, as determined by the Secretary, 1.2;

"(III) for the period beginning on the day after the date of expiration of the period described in subclause (II) and ending on the date on which the total capacity of dispatchable zero-emission technologies in the United States is greater than 15 gigawatts, as determined by the Secretary, 1.15; and

"(IV) for the period beginning on the day after the date of expiration of the period described in subclause (III) and ending on the date on which the total capacity of dispatchable zero-emission technologies in the United States is greater than 20 gigawatts,

as determined by the Secretary, 1.1; and

''(ii) for a dispatchable low-emission technology described in subparagraph (A)(iii)—

''(I) for the period beginning on the date of enactment of this section and ending on the date on which the total capacity of dispatchable low-emission technologies and dispatchable zero-emission technologies in the United States is greater than 5 gigawatts, as determined by the Secretary, 1.25;

''(II) for the period beginning on the day after the date of expiration of the period described in subclause (I) and ending on the date on which the total capacity of dispatchable low-emission technologies and dispatchable zero-emission technologies in the United States is greater than 10 gigawatts, as determined by the Secretary, 1.2;

"(III) for the period beginning on the day after the date of expiration of the period described in subclause (II) and ending on the date on which the total capacity of dispatchable low-emission technologies and dispatchable zero-emission technologies in the United States is greater than 15 gigawatts, as determined by the Secretary, 1.15; and

"(IV) for the period beginning on the day after the date of expiration of the period described in subclause (III) and ending on the date on which the total capacity of dispatchable low-emission technologies and dispatchable zero-emission technologies in the United States is greater than 20 gigawatts, as determined by the Secretary, 1.1.

"(C) PHASE-OUT.—The quantity of Federal clean energy credits issued under this section to—

"(i) a generator described in subparagraph (A)(i) that is—

"(I) a qualified dispatchable low-emission technology shall be determined in accordance with subparagraph (A)(iii), effective beginning on the earlier of—

"(aa) the date on which the qualified dispatchable low-emission technology has been in service for 10 years; and

"(bb) January 1, 2035; and

"(II) a qualified dispatchable zero-emission technology shall be determined in accordance with subparagraph (A)(ii), effective beginning on the date on which the qualified dispatchable zero-emission technology has been in service for 10 years;

"(ii) a generator described in subparagraph (A)(ii) shall be determined in accordance with paragraphs (1) through (6), effective beginning on January 1, 2050; and

"(iii) a generator described in subparagraph (A)(iii) shall be determined in accordance with paragraphs (1) through

(6), effective beginning on January 1, 2040.

''(D) PROHIBITION ON DOUBLE RECEIPTS.—A generator that receives Federal clean energy credits under subparagraph (A) may not receive any additional Federal clean energy credit under any of paragraphs (1) through (6).

''(g) DETERMINATION OF CARBON INTENSITY AND CREDIT VALUE.—

''(1) IN GENERAL.—For purposes of determining the quantity of Federal clean energy credits under subsection (f), except as otherwise provided in this subsection, the Secretary shall determine the carbon intensity of each generator using data and methods from the Air Emission Measurement Center of the Environmental Protection Agency for emission testing and monitoring, including—

''(A) Continuous Emission Monitoring Systems; and

''(B) Predictive Emission Monitoring Systems.

''(2) NATURAL GAS ADJUSTMENT.—Except as provided in paragraph (4), the Secretary shall adjust the carbon intensity determined under paragraph (1)

for each generator using natural gas by applying the methane leakage rates assumed in the 9-region MARKAL Database of the Environmental Protection Agency (commonly known as the 'EPAUS9R database').

''(3) NONEMITTING GENERATORS.—Except as provided in paragraph (4), the Secretary shall assign a carbon intensity of zero for any generator that does not produce emissions on electric energy generation, including any generator that uses renewable energy, hydropower, or nuclear power.

''(4) DETERMINATION AND NATIONAL ACADEMY OF SCIENCES STUDY.—The Secretary shall—

''(A) not later than 180 days after the date of enactment of this section, enter into an agreement with the National Academy of Sciences, under which the Academy shall—

''(i) evaluate data, models, and methodologies for quantifying lifecycle greenhouse gas emissions associated with generating electric energy from each type of significant source of clean energy, including the sources described in subparagraphs (A) and (B) of subsection (b)(8);

"(ii) evaluate data, models, and methodologies for determining the appropriate credit value for use in the quantification of Federal clean energy credits under subsection (f) for—

"(I) qualified renewable biomass, taking into consideration total lifecycle carbon dynamics, including—

"(aa) carbon absorbed through the regrowth of vegetation;

"(bb) avoided decomposition relating to the full fuel lifecycle;

"(cc) carbon sink value from land use changes and temporal changes in forest carbon sequestration; and

"(dd) lifecycle greenhouse gas emissions, including—

"(AA) direct greenhouse gas emissions; and

"(BB) significant indirect greenhouse gas emissions, including all stages of fuel and feedstock produc-

tion and distribution and feedstock generation or extraction through the distribution and delivery of the finished fuel to electric consumers;

"(II) qualified waste-to-energy, taking into consideration total lifecycle carbon dynamics, including—

"(aa) avoided decomposition relating to the feedstock lifecycle; and

"(bb) lifecycle greenhouse gas emissions, including—

"(AA) direct greenhouse gas emissions; and

"(BB) indirect greenhouse gas emissions; and

"(III) qualified low-carbon fuels, taking into consideration lifecycle greenhouse gas emissions, including—

"(aa) direct greenhouse gas emissions; and

"(bb) significant indirect greenhouse gas emissions, including—

"(AA) all stages of fuel and feedstock production and distribution; and

"(BB) feedstock generation or extraction through the distribution and delivery of the finished fuel to electric consumers;

"(iii) evaluate the appropriateness of the definitions contained in subsection (b) of the terms—

"(I) 'qualified renewable biomass', taking into consideration whether the definition should be expanded or contracted;

"(II) 'qualified waste-to-energy'; and

"(III) 'qualified low-carbon fuel';

"(iv) if it is determined under clause (iii)(I) that the definition of the term 'qualified renewable biomass' should be expanded, evaluate tools for determining the

allowable carbon stock removal levels during defined forest management operations; and

"(v) not later than 540 days after the date of enactment of this section, publish a report that includes—

"(I) a description of the evaluations under clauses (i) through (iv); and

"(II) recommendations for—

"(aa) determining the carbon intensity, accounting for lifecycle greenhouse gas emissions, of electric energy generated from each type of significant source of clean energy evaluated under clause (i);

"(bb) determining the credit value of electric energy generated from qualified renewable biomass, qualified waste-to-energy, and qualified low-carbon fuels;

"(cc) if applicable, changes to the definitions of the terms 'qualified renewable biomass',

'qualified waste-to-energy', and 'qualified low-carbon fuel'; and

"(dd) if applicable, determining the allowable carbon stock removal levels during defined forest management operations;

"(B) not later than 1 year after the date of publication of the report under subparagraph (A)(v), after providing notice an opportunity for public comment, promulgate regulations, taking into consideration the report, for—

"(i) calculating lifecycle greenhouse gas emissions of electric energy generated from each type of significant source of clean energy evaluated under subparagraph (A)(i);

"(ii) determining the carbon intensity of electric energy generated from each type of significant source of clean energy evaluated under subparagraph (A)(i); and

"(iii) determining the credit value of electric energy generated from qualified renewable biomass, qualified waste-to-energy, and qualified low-carbon fuels; and

"(C) if recommended in the report under subparagraph (A)(v)(II)(cc), submit to Congress recommendations relating to changes to the definitions of the terms 'qualified renewable biomass', 'qualified waste-to-energy', and 'qualified low-carbon fuel' for purposes of this section.

"(5) CONSULTATION.—The Secretary shall consult with—

"(A) in determining carbon intensities of generators pursuant to paragraph (1) and making adjustments pursuant to paragraph (2), the Administrator of the Environmental Protection Agency;

"(B) in promulgating regulations for calculating lifecycle greenhouse gas emissions pursuant to paragraph (4)(B)(i) and determining carbon intensities pursuant to paragraph (4)(B)(ii), the Administrator of the Environmental Protection Agency;

"(C) in promulgating regulations for determining appropriate credit values pursuant to paragraph (4)(B)(iii)—

"(i) the Administrator of the Environmental Protection Agency;

''(ii) the Secretary of Agriculture; and

''(iii) the Secretary of the Interior; and

''(D) in making recommendations to Congress under paragraph (4)(C), the Administrator of the Environmental Protection Agency, acting in consultation with the Scientific Advisory Board of the Environmental Protection Agency.

''(h) CIVIL PENALTIES.—

''(1) IN GENERAL.—Subject to paragraph (2), a retail electricity supplier that fails to meet the requirements of this section shall be subject to a civil penalty in an amount equal to the product obtained by multiplying—

''(A) the number of kilowatt-hours of electric energy sold by the retail electricity supplier to electric consumers in violation of subsection (c); and

''(B) 200 percent of the value of the alternative compliance payment, as adjusted under subsection (i)(2).

''(2) WAIVERS AND MITIGATION.—

''(A) FORCE MAJEURE.—The Secretary may mitigate or waive a civil penalty under

paragraph (1) if the applicable retail electricity supplier was unable to comply with an applicable requirement of this section for reasons outside of the reasonable control of the retail electricity supplier.

"(B) REDUCTION FOR STATE PENALTIES.—The Secretary shall reduce the amount of a penalty determined under paragraph (1) by the amount paid by the applicable retail electricity supplier to a State for failure to comply with the requirement of a State renewable energy program, if the State requirement is more stringent than the applicable requirement of this section.

"(3) PROCEDURE FOR ASSESSING PENALTY.—The Secretary shall assess a civil penalty under this subsection in accordance with section 333(d) of the Energy Policy and Conservation Act (42 U.S.C. 6303(d)).

"(i) ALTERNATIVE COMPLIANCE PAYMENTS.—

"(1) IN GENERAL.—A retail electricity supplier may satisfy the requirements of subsection (c), in whole or in part, by submitting, in lieu of Federal clean energy credits issued under this section, a payment equal to the amount required under subsection

(d)(1)(C), in accordance with such regulations as the Secretary may promulgate, subject to paragraph (2).

''(2) ADJUSTMENT.—Not later than December 1 of the second full calendar year beginning after the date of enactment of this section, and annually thereafter, the Secretary shall—

''(A) increase the rate of the alternative compliance payment under subsection (d)(1)(C) by—

''(i) during the period beginning on the date of enactment of this section and ending on December 31, 2029, 3 percent; and

''(ii) beginning on January 1, 2030, 5 percent; and

''(B) additionally adjust that rate for inflation, as the Secretary determines to be necessary.

''(j) STATE ENERGY EFFICIENCY, CLEAN ENERGY DEPLOYMENT, AND ELECTRIC CONSUMER BILL REDUCTION PROGRAM.—

''(1) ESTABLISHMENT.—Not later than December 1 of the first calendar year beginning after the date of enactment of this section, the Secretary shall establish a State energy efficiency, clean energy de-

ployment, and electric consumer bill reduction program.

''(2) FUNDING.—All funds collected by the Secretary as alternative compliance payments under subsection (i), or as civil penalties under subsection (h), shall be used solely to carry out the program under this subsection.

''(3) DISTRIBUTION TO STATES.—

''(A) IN GENERAL.—Of the funds described in paragraph (2), an amount equal to 75 percent shall be used by the Secretary, without further appropriation or fiscal year limitation, to provide funds to States, in an amount determined proportionally based on the amounts collected from each State—

''(i) for the implementation of State energy efficiency plans under section 362 of the Energy Policy and Conservation Act (42 U.S.C. 6322);

''(ii) for the conduct of clean energy programs in the State; and

''(iii) to carry out activities to reduce the amount of electricity bills for households in the State below 300 percent of the poverty line (as defined in section 673 of

the Community Services Block Grant Act (42 U.S.C. 9902)).

''(B) ACTION BY STATES.—A State that receives funds under this paragraph shall maintain such records and evidence of compliance as the Secretary may require.

''(4) GUIDELINES AND CRITERIA.—

''(A) BUY AMERICAN COMPLIANCE.—The funds made available under the program established under this subsection shall not be used for a project unless the project achieves compliance with all applicable requirements of chapter 83 of title 41, United States Code (formerly known as the 'Buy American Act').

''(B) DAVIS-BACON COMPLIANCE.—

''(i) IN GENERAL.—All laborers and mechanics employed on projects funded directly, or assisted in whole or in part, by this section shall be paid wages at rates not less than those prevailing on projects of a character similar in the locality as determined by the Secretary of Labor in accordance with subchapter IV of chapter 31 of part A of subtitle II of title 40, United

States Code (commonly referred to as the 'Davis-Bacon Act').

''(ii) AUTHORITY.—With respect to the labor standards specified in this subparagraph, the Secretary of Labor shall have the authority and functions set forth in Reorganization Plan Numbered 14 of 1950 (64 Stat. 1267; 5 U.S.C. App.) and section 3145 of title 40, United States Code.

''(C) ADDITIONAL GUIDELINES AND CRITERIA.—The Secretary may issue such additional guidelines and criteria for the program under this subsection as the Secretary determines to be appropriate.

''(k) STATE PROGRAMS.—

''(1) SAVINGS PROVISION.—

''(A) IN GENERAL.—Subject to subparagraph (B), nothing in this section affects the authority of a State or a political subdivision of a State to adopt or enforce any law or regulation relating to—

''(i) clean or renewable energy; or

''(ii) the regulation of any retail electricity supplier.

''(B) FEDERAL LAW.—No law or regulation of a State or a political subdivision of a State may relieve a retail electricity supplier from the obligation to comply with an applicable requirement of this section.

''(2) COORDINATION.—The Secretary, in consultation with States that have clean and renewable energy programs in effect, shall facilitate, to the maximum extent practicable, coordination between the Federal clean energy program under this section and the relevant State clean and renewable energy programs.

''(l) INFORMATION COLLECTION.—

''(1) IN GENERAL.—The Secretary may require any retail electricity supplier, generator, or any other entity that the Secretary determines appropriate to submit to the Secretary any information the Secretary determines to be appropriate to carry out this section.

''(2) FAILURE TO SUBMIT; FALSE OR MISLEADING INFORMATION.—An entity required to submit information pursuant to paragraph (1) that fails to submit the information, or submits false or misleading information, shall be in violation of this section.

''(m) REPORT ON CLEAN ENERGY RESOURCES THAT DO NOT GENERATE ELECTRIC ENERGY.—

''(1) IN GENERAL.—Not later than 3 years after the date of enactment of this section, the Secretary shall submit to Congress a report examining mechanisms to supplement the standard under this section by addressing clean energy resources that do not generate electric energy but that may substantially reduce overall energy emissions, including energy efficiency, demand response, flexible load, beneficial electrification, microgrids, biomass converted to thermal energy, geothermal energy collected using heat pumps, thermal energy delivered through district heating systems, and waste heat used as industrial process heat.

''(2) POTENTIAL INTEGRATION.—The report under paragraph (1) shall examine the benefits and challenges of integrating the additional clean energy resources into the standard established by this section, including—

''(A) the extent to which such an integration would achieve the purposes of this section;

''(B) the manner in which a baseline describing the use of the resources could be developed that would ensure that only incremental

action that increased the use of the resources received credit; and

''(C) the challenges of crediting the resources, alone or in combination with other resources, in a comparable manner between organized markets and vertically integrated markets to incentivize sufficient deployment of those resources to support efficient integration into the standard.

''(3) COMPLEMENTARY POLICIES.—The report under paragraph (1) shall examine the benefits and challenges of using complementary policies or standards, other than the standard established under this section, to provide effective incentives for using the additional clean energy resources.

''(4) LEGISLATIVE RECOMMENDATIONS.—As part of the report under paragraph (1), the Secretary shall provide legislative recommendations for changes to the standard established under this section or new complementary policies that would provide effective incentives for using the additional clean energy resources.

''(n) PERIODIC REVIEW AND ADJUSTMENTS.—

''(1) NATIONAL ACADEMY OF SCIENCES REVIEW.—The Secretary shall enter into an agreement

with the National Academy of Sciences under which the Academy shall, not later than July 1, 2028, and every 10 years thereafter, submit to Congress and the Secretary a comprehensive evaluation of all aspects of the standard established under this section, including—

''(A) an evaluation of the effectiveness of the standard in decreasing the aggregate net carbon dioxide equivalent emissions in the electric sector, including—

''(i) a comparison of—

''(I) the actual carbon dioxide equivalent emissions associated with the electric sector for the preceding calendar year; and

''(II)(aa) for the initial review, 900,000,000 metric tons of carbon dioxide equivalent;

''(bb) for the review conducted with respect to calendar year 2038, 600,000,000 metric tons of carbon dioxide equivalent; or

''(cc) if the Academy determines that an emissions value described in item (aa) or (bb) is inappropriate

after taking into consideration changes in electric energy consumption, and in emissions relating to energy use outside of the electric sector, such emissions as the Academy determines to be appropriate for the applicable review year; and

''(ii) an evaluation of the methods by which the quantity of Federal clean energy credits is determined, including—

''(I) alternative methods of quantifying credits for clean energy resources eligible to receive Federal clean energy credits under this section that may be more effective, such as—

''(aa) issuing credits based on the difference between the carbon intensity of a generator and the marginal emissions rate in a given hour and balancing area; and

''(bb) adjusting the innovation multipliers; and

''(II) potential methods of crediting other clean energy resources not

already addressed in the report under subsection (m);

"(B) the impact of the standard on the reliability, resilience, security, and safety of electricity generation, transmission, and distribution;

"(C) the impact of the standard on the function of regulated and deregulated electricity markets;

"(D) the net benefits or costs of the standard to the United States and the States, including—

"(i) the effects on electricity demand and prices;

"(ii) the economic development benefits of investment;

"(iii) lifecycle environmental and safety costs and benefits;

"(iv) the impacts on public health and health care costs; and

"(v) avoided costs relating to environmental damages and adaptation investments that otherwise would have been required;

''(E) the impact of the standard on the emissions of behind-the-meter and off-grid electricity generation;

''(F) recommendations regarding potential changes to the standard, such as—

''(i) to regulations and procedures for implementing the standard;

''(ii) to the structure and specific design elements of the standard, such as—

''(I) if the comparison of emissions under paragraph (1)(A)(i) reveals that actual emissions for the electric sector are greater than the required emissions under paragraph (1)(A)(i)(II), changes to the values of the growth rates, the applicable carbon intensity, and alternative compliance payment to eliminate the gap between actual and required emissions;

''(II) the quantification of Federal clean energy credits; and

''(III) the value of and eligibility for the innovation multiplier; and

"(iii) to the structure and administration of the Federal clean energy credit trading program; and

"(G) recommendations regarding potential changes to related public policies or creation of new complementary policies.

"(2) RECOMMENDATIONS TO CONGRESS.—Not later than January 1, 2029, and not less frequently than once every 10 years thereafter, the Secretary shall submit to the Committee on Energy and Natural Resources of the Senate and the Committee on Energy and Commerce of the House of Representatives a report including recommendations for modifications and improvements to the standard established under this section, including an explanation of the inconsistencies, if any, between—

"(A) the recommendations of the Secretary; and

"(B) the recommendations included in the evaluation of the National Academy of Sciences under paragraph (1).

"(3) CONGRESSIONAL ACTION.—Not later than January 1, 2030, and not less frequently than once every 10 years thereafter, Congress shall enact legislation that amends this section or establishes new

policies based on the recommendations submitted by the Secretary under paragraph (2).

''(4) ADJUSTMENTS UPON FAILURE OF CONGRESSIONAL ACTION.—

''(A) IN GENERAL.—If Congress fails to enact legislation under paragraph (3) by an applicable deadline, the Secretary—

''(i) shall, in any case in which the comparison of emissions under paragraph (1)(A)(i) reveals that actual emissions for the electric sector are greater than the required emissions under paragraph (1)(A)(i)(II), make such compensatory adjustments to the standard established under this section as the Secretary considers to be necessary, based on, and consistent with, the findings and recommendations of the National Academy of Sciences under paragraph (1)(F)(ii)(I), to eliminate the gap between actual and required emissions by not later than 3 years after the date of the applicable deadline by—

''(I) increasing the fast growth rate;

"(II) increasing the slow growth rate;

"(III) increasing the small growth rate;

"(IV) decreasing the applicable carbon intensity;

"(V) increasing the alternative compliance payment under subsection (d)(1)(C); or

"(VI) taking a combination of actions described in subclauses (I) through (V); and

"(ii) if the evaluation of the crediting system under paragraph (1)(A)(ii) describes a more-effective method of issuing Federal clean energy credits to clean energy resources, may make other modifications and improvements to the standard based on, and consistent with, the recommendations under paragraph (1)(F)(ii) that would have the effect of decreasing economy-wide emissions.

"(B) REQUIREMENT.—In making the compensatory adjustments under subparagraph (A)(i), the Secretary shall ensure that retail

electricity suppliers that have exceeded the proportionate share of the reductions of the retail electricity suppliers required under paragraph (1)(A)(i)(II) shall not bear significant additional costs under this paragraph.

''(o) REGULATIONS.—Not later than 1 year after the date of enactment of this section, the Secretary shall promulgate regulations to implement this section.''.

(b) CONFORMING AMENDMENT.—The table of contents of the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. prec. 2601) is amended by adding at the end of the items relating to title VI the following:

''609. Rural and remote communities electrification grants.
''610. Federal clean energy standard.''.

SEC. 3. CLEAN ENERGY RESEARCH, DEVELOPMENT, DEMONSTRATION, AND DEPLOYMENT PROGRAM.

(a) ESTABLISHMENT.—The Secretary of Energy shall establish a cross-cutting national program within the Department of Energy for the research, development, demonstration, and deployment of clean energy technologies and portfolios for the purpose of meeting the requirements established under section 610 of the Public Utility Regulatory Policies Act of 1978 (as added by section 2(a)).

(b) REQUIREMENTS.—In establishing the program under subsection (a), the Secretary of Energy shall—

(1) identify and coordinate, across all relevant program offices throughout the Department of Energy, key areas of existing and future research with respect to a portfolio of technologies and approaches;

(2) with respect to dispatchable low-emission technologies and dispatchable zero-emission technologies (as defined in sections 610(b) of the Public Utility Regulatory Policies Act of 1978 (as added by section 2(a))—

(A) prioritize programs that would accelerate the research, development, demonstration, and deployment of technologies by—

(i) identifying specific applications of those technologies;

(ii) cataloguing existing Department of Energy programs and research to advance the specific applications; and

(iii) establishing a center within the Department of Energy to coordinate research priorities and demonstration programs for the specific applications;

(B) adopt long-term cost, performance, and deployment targets for the specific applications identified under subparagraph (A)(i), including a goal of conducting not fewer than 5

technology demonstrations in the United States by December 31, 2030;

(C) identify opportunities to work with States and the private sector for technology demonstration; and

(D) identify barriers to the demonstration and deployment of those technologies;

(3) identify approaches to expedite deployment of clean energy technologies by evaluating and avoiding or minimizing potential impacts to natural communities, ecological resources, and high-quality working land; and

(4) recommend to Congress any additional funding needs or policy changes necessary to implement the program.

(c) FUNDING.—Subject to the availability of appropriations, the Secretary of Energy may use amounts available to the Secretary to carry out this section.

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