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SENATE

{ REPORT
116-148

CLEAN INDUSTRIAL TECHNOLOGY ACT OF 2019

OCTOBER 24, 2019.—Ordered to be printed

Ms. MURKOWSKI, from the Committee on Energy and Natural Resources, submitted the following

R E P O R T

[To accompany S. 2300]

The Committee on Energy and Natural Resources, to which was referred the bill (S. 2300) to amend the Energy Independence and Security Act of 2007 to establish a program to incentivize innovation and to enhance the industrial competitiveness of the United States by developing technologies to reduce emissions of nonpower industrial sectors, having considered the same, and for other purposes, reports favorably thereon with an amendment (in the nature of a substitute) and recommends that the bill, as amended, do pass.

AMENDMENT

The amendment is as follows:

Strike all after the enacting clause and insert the following:

SECTION 1. SHORT TITLE.

This Act may be cited as the “Clean Industrial Technology Act of 2019” or the “CIT Act of 2019”.

SEC. 2. PURPOSE.

The purpose of this Act and the amendments made by this Act is to encourage the development and evaluation of innovative technologies aimed at increasing—

- (1) the technological and economic competitiveness of industry and manufacturing in the United States; and
- (2) the emissions reduction of nonpower industrial sectors.

SEC. 3. INDUSTRIAL EMISSIONS REDUCTION TECHNOLOGY DEVELOPMENT PROGRAM.

(a) IN GENERAL.—The Energy Independence and Security Act of 2007 is amended by inserting after section 453 (42 U.S.C. 17112) the following:

“SEC. 454. INDUSTRIAL EMISSIONS REDUCTION TECHNOLOGY DEVELOPMENT PROGRAM.

“(a) DEFINITIONS.—In this section:

- “(1) DIRECTOR.—The term ‘Director’ means the Director of the Office of Science and Technology Policy.

“(2) ELIGIBLE ENTITY.—The term ‘eligible entity’ means—

- “(A) a scientist or other individual with knowledge and expertise in emissions reduction;
- “(B) an institution of higher education;
- “(C) a nongovernmental organization;
- “(D) a National Laboratory;
- “(E) a private entity; and
- “(F) a partnership or consortium of 2 or more entities described in subparagraphs (B) through (E).

“(3) EMISSIONS REDUCTION.—

“(A) IN GENERAL.—The term ‘emissions reduction’ means the reduction, to the maximum extent practicable, of net nonwater greenhouse gas emissions to the atmosphere by energy services and industrial processes.

“(B) EXCLUSION.—The term ‘emissions reduction’ does not include the elimination of carbon embodied in the principal products of industrial manufacturing.

“(4) INSTITUTION OF HIGHER EDUCATION.—The term ‘institution of higher education’ has the meaning given the term in section 101 of the Higher Education Act of 1965 (20 U.S.C. 1001).

“(5) PROGRAM.—The term ‘program’ means the program established under subsection (b)(1).

“(b) INDUSTRIAL EMISSIONS REDUCTION TECHNOLOGY DEVELOPMENT PROGRAM.—

“(1) IN GENERAL.—Not later than 1 year after the date of enactment of the CIT Act of 2019, the Secretary, in consultation with the Director, the heads of relevant Federal agencies, National Laboratories, industry, and institutions of higher education, shall establish a crosscutting industrial emissions reduction technology development program of research, development, demonstration, and commercial application to further the development and commercialization of innovative technologies that—

- “(A) increase the technological and economic competitiveness of industry and manufacturing in the United States;
- “(B) increase the viability and competitiveness of United States industrial technology exports; and
- “(C) achieve emissions reduction in nonpower industrial sectors.

“(2) COORDINATION.—In carrying out the program, the Secretary shall—

- “(A) coordinate with each relevant office in the Department and any other Federal agency;
- “(B) coordinate and collaborate with the Industrial Technology Innovation Advisory Committee established under section 455; and
- “(C) coordinate and seek to avoid duplication with the energy-intensive industries program established under section 452.

“(3) LEVERAGE OF EXISTING RESOURCES.—In carrying out the program, the Secretary shall leverage, to the maximum extent practicable—

- “(A) existing resources and programs of the Department and other relevant Federal agencies; and
- “(B) public-private partnerships.

“(c) FOCUS AREAS.—The program shall focus on—

“(1) industrial production processes, including technologies and processes that—

“(A) achieve emissions reduction in high-emissions industrial materials production processes, including production processes for iron, steel, steel mill products, aluminum, cement, glass, pulp, paper, and industrial ceramics;

“(B) achieve emissions reduction in medium- and high-temperature heat generation, including—

- “(i) through electrification of heating processes;
- “(ii) through renewable heat generation technology;
- “(iii) through combined heat and power; and
- “(iv) by switching to alternative fuels, including hydrogen and nuclear energy;

“(C) achieve emissions reduction in chemical production processes, including by incorporating, if appropriate and practicable, principles, practices, and methodologies of sustainable, green chemistry and engineering;

“(D) leverage smart manufacturing technologies and principles, digital manufacturing technologies, and advanced data analytics to develop advanced technologies and practices in information, automation, monitoring, computation, sensing, modeling, and networking to—

- “(i) model and simulate manufacturing production lines;
- “(ii) monitor and communicate production line status;

- “(iii) manage and optimize energy productivity and cost throughout production; and
 - “(iv) model, simulate, and optimize the energy efficiency of manufacturing processes;
 - “(E) minimize the negative environmental impacts of manufacturing and sustainable chemistry while conserving energy and resources, including—
 - “(i) by designing products that enable reuse, refurbishment, remanufacturing, and recycling;
 - “(ii) by minimizing waste from industrial processes, including through the reuse of waste as other resources in other industrial processes for mutual benefit; and
 - “(iii) by increasing resource efficiency; and
 - “(F) increase the energy efficiency of industrial processes;
 - “(2) alternative materials that produce fewer emissions during production and result in fewer emissions during use, including—
 - “(A) innovative building materials;
 - “(B) high-performance lightweight materials; and
 - “(C) substitutions for critical materials and minerals;
 - “(3) development of net-zero emissions liquid and gaseous fuels;
 - “(4) emissions reduction in shipping, aviation, and long distance transportation;
 - “(5) carbon capture technologies for industrial processes;
 - “(6) other technologies that achieve net-zero emissions in nonpower industrial sectors, as determined by the Secretary, in consultation with the Director; and
 - “(7) high-performance computing to develop advanced materials and manufacturing processes contributing to the focus areas described in paragraphs (1) through (6), including—
 - “(A) modeling, simulation, and optimization of the design of energy efficient and sustainable products; and
 - “(B) the use of digital prototyping and additive manufacturing to enhance product design.
- “(d) GRANTS, CONTRACTS, COOPERATIVE AGREEMENTS, AND DEMONSTRATION PROJECTS.—
- “(1) GRANTS.—In carrying out the program, the Secretary shall award grants on a competitive basis to eligible entities for projects that the Secretary determines would best achieve the goals of the program.
 - “(2) CONTRACTS AND COOPERATIVE AGREEMENTS.—In carrying out the program, the Secretary may enter into contracts and cooperative agreements with eligible entities and Federal agencies for projects that the Secretary determines would further the purposes of the program.
 - “(3) DEMONSTRATION PROJECTS.—In supporting technologies developed under this section, the Secretary shall fund demonstration projects that test and validate technologies described in subsection (c).
 - “(4) APPLICATION.—An entity seeking funding or a contract or agreement under this subsection shall submit to the Secretary an application at such time, in such manner, and containing such information as the Secretary may require.
 - “(5) COST SHARING.—In awarding funds under this section, the Secretary shall require cost sharing in accordance with section 988 of the Energy Policy Act of 2005 (42 U.S.C. 16352).”

(b) TECHNICAL AMENDMENT.—The table of contents of the Energy Independence and Security Act of 2007 (Public Law 110–140; 121 Stat. 1494) is amended by inserting after the item relating to section 453 the following:

“Sec. 454. Industrial emissions reduction technology development program.”.

SEC. 4. INDUSTRIAL TECHNOLOGY INNOVATION ADVISORY COMMITTEE.

(a) IN GENERAL.—The Energy Independence and Security Act of 2007 is amended by inserting after section 454 (as added by section 3(a)) the following:

“SEC. 455. INDUSTRIAL TECHNOLOGY INNOVATION ADVISORY COMMITTEE.

“(a) DEFINITIONS.—In this section:

- “(1) COMMITTEE.—The term ‘Committee’ means the Industrial Technology Innovation Advisory Committee established under subsection (b).
- “(2) DIRECTOR.—The term ‘Director’ means the Director of the Office of Science and Technology Policy.
- “(3) EMISSIONS REDUCTION.—The term ‘emissions reduction’ has the meaning given the term in section 454(a).
- “(4) PROGRAM.—The term ‘program’ means the industrial emissions reduction technology development program established under section 454(b)(1).
- “(b) ESTABLISHMENT.—Not later than 180 days after the date of enactment of the CIT Act of 2019, the Secretary, in consultation with the Director, shall establish an

advisory committee, to be known as the ‘Industrial Technology Innovation Advisory Committee’.

“(c) MEMBERSHIP.—

“(1) APPOINTMENT.—The Committee shall be comprised of not fewer than 14 members and not more than 18 members, who shall be appointed by the Secretary, in consultation with the Director.

“(2) REPRESENTATION.—Members appointed pursuant to paragraph (1) shall include—

“(A) not less than 1 representative of each relevant Federal agency, as determined by the Secretary;

“(B) the Chair of the Secretary of Energy Advisory Board, if that position is filled;

“(C) not less than 2 representatives of labor groups;

“(D) not less than 3 representatives of the research community, which shall include academia and National Laboratories;

“(E) not less than 2 representatives of nongovernmental organizations;

“(F) not less than 6 representatives of small- and large-scale industry, the collective expertise of which shall cover every focus area described in section 454(c); and

“(G) any other individuals the Secretary, in coordination with the Director, determines to be necessary to ensure that the Committee is comprised of a diverse group of representatives of industry, academia, independent researchers, and public and private entities.

“(3) CHAIR.—The Secretary shall designate a member of the Committee to serve as Chair.

“(d) DUTIES.—

“(1) IN GENERAL.—The Committee shall—

“(A) in consultation with the Secretary and the Director, propose missions and goals for the program, which shall be consistent with the purposes of the program described in section 454(b)(1); and

“(B) advise the Secretary with respect to the program—

“(i) by identifying and evaluating any technologies being developed by the private sector relating to the focus areas described in section 454(c);

“(ii) by identifying technology gaps in the private sector in those focus areas, and making recommendations to address those gaps;

“(iii) by surveying and analyzing factors that prevent the adoption of emissions reduction technologies by the private sector; and

“(iv) by recommending technology screening criteria for technology developed under the program to encourage adoption of the technology by the private sector; and

“(C) develop the strategic plan described in paragraph (2).

“(2) STRATEGIC PLAN.—

“(A) PURPOSE.—The purpose of the strategic plan developed under paragraph (1)(C) is to achieve the goals of the program in the focus areas described in section 454(c).

“(B) CONTENTS.—The strategic plan developed under paragraph (1)(C) shall—

“(i) specify near-term and long-term qualitative and quantitative objectives relating to each focus area described in section 454(c), including research, development, demonstration, and commercial application objectives;

“(ii) specify the anticipated timeframe for achieving the objectives specified under clause (i);

“(iii) include plans for developing emissions reduction technologies that are globally cost-competitive;

“(iv) identify the public and private costs of achieving the objectives specified under clause (i); and

“(v) estimate the economic and employment impact in the United States of achieving those objectives.

“(e) MEETINGS.—

“(1) FREQUENCY.—The Committee shall meet not less frequently than 2 times per year, at the call of the Chair.

“(2) INITIAL MEETING.—Not later than 30 days after the date on which the members are appointed under subsection (b), the Committee shall hold its first meeting.

“(f) COMMITTEE REPORT.—

“(1) IN GENERAL.—Not later than 2 years after the date of enactment of the CIT Act of 2019, and not less frequently than once every 3 years thereafter, the

Committee shall submit to the Secretary a report on the progress of achieving the purposes of the program.

“(2) CONTENTS.—The report under paragraph (1) shall include—

“(A) a description of any technology innovation opportunities identified by the Committee;

“(B) a description of any technology gaps identified by the Committee under subsection (d)(1)(B)(ii);

“(C) recommendations for improving technology screening criteria and management of the program;

“(D) an evaluation of the progress of the program and the research and development funded under the program;

“(E) any recommended changes to the focus areas of the program described in section 454(c);

“(F) a description of the manner in which the Committee has carried out the duties described in subsection (d)(1) and any relevant findings as a result of carrying out those duties;

“(G) if necessary, an update to the strategic plan developed by the Committee under subsection (d)(1)(C);

“(H) the progress made in achieving the goals set out in that strategic plan;

“(I) a review of the management, coordination, and industry utility of the program;

“(J) an assessment of the extent to which progress has been made under the program in developing commercial, cost-competitive technologies in each focus area described in section 454(c); and

“(K) an assessment of the effectiveness of the program in coordinating efforts within the Department and with other Federal agencies to achieve the purposes of the program.

“(g) REPORT TO CONGRESS.—Not later than 60 days after receiving a report from the Committee under subsection (f), the Secretary shall submit a copy of that report to the Committees on Appropriations and Science, Space, and Technology of the House of Representatives, the Committees on Appropriations and Energy and Natural Resources of the Senate, and any other relevant Committee of Congress.

“(h) APPLICABILITY OF FEDERAL ADVISORY COMMITTEE ACT.—Except as otherwise provided in this section, the Federal Advisory Committee Act (5 U.S.C. App.) shall apply to the Committee.”.

(b) TECHNICAL AMENDMENT.—The table of contents of the Energy Independence and Security Act of 2007 (Public Law 110–140; 121 Stat. 1494) (as amended by section 3(b)) is amended by inserting after the item relating to section 454 the following:

“Sec. 455. Industrial Technology Innovation Advisory Committee.”.

SEC. 5. TECHNICAL ASSISTANCE PROGRAM TO IMPLEMENT INDUSTRIAL EMISSIONS REDUCTION.

(a) IN GENERAL.—The Energy Independence and Security Act of 2007 is amended by inserting after section 455 (as added by section 4(a)) the following:

“SEC. 456. TECHNICAL ASSISTANCE PROGRAM TO IMPLEMENT INDUSTRIAL EMISSIONS REDUCTION.

“(a) DEFINITIONS.—In this section:

“(1) ELIGIBLE ENTITY.—The term ‘eligible entity’ means—

“(A) a State;

“(B) a unit of local government;

“(C) a territory or possession of the United States;

“(D) a relevant State or local office, including an energy office;

“(E) a tribal organization (as defined in section 3765 of title 38, United States Code);

“(F) an institution of higher education; and

“(G) a private entity.

“(2) EMISSIONS REDUCTION.—The term ‘emissions reduction’ has the meaning given the term in section 454(a).

“(3) INSTITUTION OF HIGHER EDUCATION.—The term ‘institution of higher education’ has the meaning given the term in section 101 of the Higher Education Act of 1965 (20 U.S.C. 1001).

“(4) PROGRAM.—The term ‘program’ means the program established under subsection (b).

“(b) ESTABLISHMENT.—Not later than 180 days after the date of enactment of the CIT Act of 2019, the Secretary shall establish a program to provide technical assistance to eligible entities to carry out an activity described in subsection (c).

“(c) ACTIVITIES DESCRIBED.—An activity referred to in subsection (b) is any of the following activities carried out for the purpose of achieving emissions reduction in nonpower industrial sectors:

- “(1) Adopting emissions reduction technologies.
- “(2) Establishing goals and priorities to accelerate the development and evaluation of relevant technologies.
- “(3) Developing collaborations across States, local governments, and territories and possessions of the United States.
- “(4) Reviewing the appropriate emissions reduction technologies available for a particular eligible entity.
- “(5) Developing a roadmap for implementing emissions reduction technologies for a particular eligible entity.
- “(6) Any other activity determined appropriate by the Secretary.

“(d) APPLICATIONS.—

“(1) IN GENERAL.—An eligible entity desiring technical assistance under the program shall submit to the Secretary an application at such time, in such manner, and containing such information as the Secretary may require.

“(2) APPLICATION PROCESS.—The Secretary shall seek applications for technical assistance under the program on a periodic basis, but not less frequently than once every 12 months.

“(3) FACTORS FOR CONSIDERATION.—In selecting eligible entities for technical assistance under the program, the Secretary shall—

“(A) give priority to—

“(i) activities carried out with technical assistance under the program that have the greatest potential for achieving emissions reduction in nonpower industrial sectors;

“(ii) activities carried out in a State in which there are active or inactive industrial facilities that may be used or retrofitted to carry out activities under the focus areas described in section 454(c); and

“(iii) activities carried out in an economically distressed area (as described in section 301(a) of the Public Works and Economic Development Act of 1965 (42 U.S.C. 3161(a))); and

“(B) ensure that—

“(i) there is geographic diversity among the eligible entities selected; and

“(ii) the activities carried out with technical assistance under the program reflect a majority of the focus areas described in section 454(c).”.

(b) TECHNICAL AMENDMENT.—The table of contents of the Energy Independence and Security Act of 2007 (Public Law 110–140; 121 Stat. 1494) (as amended by section 4(b)) is amended by inserting after the item relating to section 455 the following:

“Sec. 456. Technical assistance program to implement industrial emissions reduction.”.

SEC. 6. COORDINATION OF RESEARCH AND DEVELOPMENT OF ENERGY EFFICIENT TECHNOLOGIES FOR INDUSTRY.

Section 6(a) of the American Energy Manufacturing Technical Corrections Act (42 U.S.C. 6351(a)) is amended—

(1) by striking “Industrial Technologies Program” each place it appears and inserting “Advanced Manufacturing Office”; and

(2) in the matter preceding paragraph (1), by striking “Office of Energy” and all that follows through “Office of Science” and inserting “Department of Energy”.

PURPOSE

The purpose of S. 2300 is to amend the Energy Independence and Security Act of 2007 (EISA, Public Law 110–140) to establish a program to incentivize innovation and to enhance the industrial competitiveness of the United States by developing technologies to reduce emissions of nonpower industrial sectors.

BACKGROUND AND NEED

According to the International Energy Agency (IEA), global industrial emissions account for a quarter of carbon emissions and 37 percent of total final energy use, and heavy transport emissions, in-

cluding aviation, shipping, freight, and rail, make up an additional 13 percent of global carbon emissions.

Industrial emissions are expected to increase by 50 percent between now and 2050. The vast majority of industrial energy use in the United States is for manufacturing. Historically, industrial emissions reductions have been focused on increases in efficiency, but at the global level, process efficiency in key materials production areas has remained flat for several years. The IEA found that reducing industrial emissions in order to address climate change, without impacting economic growth, will require new technologies, along with further efficiencies, including carbon capture, low-emission heat, alternative industrial processes, and fuel switching.

The Department of Energy (DOE or Department) has historically conducted a variety of research into new industrial energy and vehicle technologies. In recent years, the Advance Manufacturing Office (AMO) has conducted the vast majority of the Department's industrial energy research, while the Vehicle Technologies Office (VTO) has performed research on fuel efficiency, engine design, and weight reduction of vehicles, including heavy-duty trucks. AMO conducts research across 14 technology areas, provides energy efficiency technical assistance to American manufacturers, and oversees five national manufacturing institutes ranging from power electronics manufacturing to process intensification.

AMO and VTO are housed within the office of Energy Efficiency and Renewable Energy (EERE), with a primary focus on reducing the energy use of various industrial processes and enhancing vehicle fuel efficiency and electrification, respectively. Because AMO and VTO are concentrated within EERE, they have focused on research and development (R&D) opportunities in efficiency rather than on industrial processes or alternative heavy transportation fuels.

S. 2300 seeks to modernize DOE's research into industrial energy and heavy-duty transportation technologies to create a crosscutting emissions reduction program that would coordinate research across all offices within the Department. The bill would also create an advisory committee within DOE to ensure research is well suited to industry's needs and to collaborate with other Federal departments. The bill would also establish a technical assistance program to help states, local governments, and tribal organizations implement the low carbon technologies.

LEGISLATIVE HISTORY

S. 2300 was introduced by Senators Whitehouse, Capito, Manchin, Braun, Booker, and Collins on July 25, 2019. Senator Feinstein was added as a cosponsor. The Subcommittee on Energy held a hearing on S. 2300 on September 11, 2019.

Similar legislation, H.R. 3978, was introduced in the House of Representatives by Representative Casten on July 25, 2019, and referred to the Science, Space and Technology Committee and the Energy and Commerce Committee.

The Senate Committee on Energy and Natural Resources met in open business session on September 25, 2019, and ordered S. 2300 favorably reported, as amended.

COMMITTEE RECOMMENDATION

The Senate Committee on Energy and Natural Resources, in open business session on September 25, 2019, by a majority voice vote of a quorum present, recommends that the Senate pass S. 2300, if amended as described herein. Senators Lee and McSally asked to be recorded as voting no.

COMMITTEE AMENDMENT

During its consideration of S. 2300, the Committee adopted an amendment in the nature of a substitute. The substitute amendment changes a coordination requirement to a consultation requirement in section 454(b) and adds additional program requirements regarding increased domestic industrial technology exports and avoiding duplication of the energy-intensive industries program in section 452.

The substitute amendment also modifies the program's focus areas in section 454(c) to add nuclear energy as an alternative fuel in paragraph (1)(B); add the use of sustainable green chemistry in paragraph (1)(C); add a "model" category in paragraph (1)(D); add waste reuse in paragraph (1)(E); change "reducing resource intensity" to "increasing resource efficiency" in paragraph (1)(E)(iii); and make technical changes. The substitute amendment removes the use of alternative fuels from paragraph (4) and expands high performance computing to cover activities in paragraphs (1) through (6).

The substitute amendment deletes the appropriations authorization in section 454(e).

The substitute amendment changes a coordination requirement to a consultation requirement in section 455(c). It also adds the Chair of the Secretary of Energy Advisory Board to the Industrial Technology Advisory Committee, caps that Committee's membership to 18 members, allows industry members of the Committee to include both small and large-scale industry, and makes technical changes.

The substitute amendment changes the Committee directive to develop the industrial technology innovation program's mission and goals contained in section 455(d) to a directive to propose such mission and goals instead. It changes the "roadmap" to a "Strategic Plan" and adds cost-related requirements to the Strategic Plan.

The substitute amendment makes conforming changes in section 455(f) to require the inclusion of the roadmap to the Committee's report only if necessary. It also augments the list of Congressional committees receiving reports from the Committee in section 455(g).

The substitute amendment modifies section 456(c) to specify that the technical assistance program shall review the "technologies available" for appropriate emissions reductions for an eligible entity, and develop an implementation roadmap.

The substitute amendment changes "Priorities" to "Factors for Consideration" in section 456(d)(3) and adds subparagraph (A) to specify the activities for which the Secretary is to prioritize technical assistance, including activities carried out with program technical assistance and activities carried out in an economically distressed area.

The substitute amendment further modifies the Secretary's prioritization based on the State's historical factors in section 456(d)(3)(A)(ii) to consider active or inactive industrial facilities in a State. The amendment also directs the Secretary to ensure geographic diversity among selected entities and that the technical assistance program reflect a majority of the focus areas in section 456(d)(3)(B).

The substitute amendment deletes the appropriations authorization in section 456(e).

SECTION-BY-SECTION ANALYSIS

Section 1. Short title

Section 1 sets forth the short title of the bill.

Sec. 2. Purpose

Section 2 sets forth the purpose of the bill.

Sec. 3. Industrial emissions reduction technology development program

Section 3(a) amends subtitle D of title IV of EISA to add a new section 454 titled "Industrial Emissions Reduction Technology Development Program."

The new section 454(a) provides key definitions.

The new section 454(b) directs the Secretary, in consultation with the Director of the Office of Science and Technology Policy, relevant Federal agencies, national laboratories, industry and higher education institutions, to establish a crosscutting industrial emissions reduction technology research development demonstration and commercial application program. The Secretary is directed to coordinate with other relevant Federal agencies, the Industrial Technology Innovation Advisory Committee established under the new section 455, and the energy intensive industries program.

The new section 454(c) specifies the following seven program focus areas to achieve emissions reduction: (1) industrial production processes; (2) energy efficient alternative materials; (3) net-zero emission liquid and gaseous fuels; (4) emissions reduction in shipping, aviation, and long distance transportation; (5) carbon capture for industrial processes; (6) other technologies that can achieve net zero emissions in nonpower industrial sectors; and (7) high performance computing for technologies in focus areas (1) through (6).

The new section 454(d) directs the Secretary to award grants, contracts, cooperative agreements, and demonstration projects for projects that can meet the program's goals. Projects under this section must meet the cost-sharing requirements of section 988 of the Energy Policy Act of 2005 (Public Law 109-58).

Subsection (b) makes conforming changes to EISA's table of contents.

Sec. 4. Industrial Technology Innovation Advisory Committee

Section 4(a) amends subtitle D of title IV of EISA to add a new section 455 titled "Industrial Technology Innovation Advisory Committee."

The new section 455(a) provides key definitions.

The new section 455(b) directs the Secretary, in coordination with the Director of the Office of Science and Technology Policy (Director), and within 180 days of enactment, to establish an Industrial Technology Innovation Advisory Committee at DOE.

The new section 455(c) specifies that the Committee have between 14 and 18 members, to be appointed by the Secretary in consultation with the Director. The section further details the number of Committee members to be derived from Federal agencies, labor groups, the research community, nongovernmental organizations, and industries representing each of the focus areas set forth in the new section 454(c).

The new section 455(d) sets forth the Committee's duties, including proposing program missions and goals and advising the Secretary and Director on technologies related to the Program; identifying technology gaps; analyzing factors preventing private sector adoption of emissions reduction technologies; and recommending technology screening criteria. The Committee is also directed to develop a strategic plan to achieve the program goals, including specifying near and long-term goals and plans for developing technologies consistent with each of the program's seven focus areas.

The new section 455(e) provides that the Committee shall meet within 30 days of the members being appointed, and not less than twice a year thereafter.

The new section 455(f) requires the Committee to submit a report to the Secretary within two years of enactment and an update at least every three years thereafter. The report must include updates on each of the areas outlined in new section 455(d), as well as the program's performance and achievements.

The new section 455(g) directs the Secretary to submit a copy of the Committee's report to the relevant Congressional committees within 60 days of receipt.

The new section 455(h) stipulates that except as provided for in this section, the Federal Advisory Committee Act (5 U.S.C. App.) applies to the Committee.

Subsection (b) makes conforming changes to EISA's table of contents.

Sec. 5. Technical assistance program to implement industrial emissions reduction

Section 5(a) amends subtitle D of title IV of EISA to add a new section 456 titled "Technical Assistance Program to Implement Industrial Emissions Reduction."

The new section 456(a) provides key definitions.

The new section 456(b) directs the Secretary to establish a program to provide technical assistance to eligible entities within 180 days of enactment.

The new section 456(c) describes activities eligible for receiving technical assistance under the program, including adopting emissions reduction technologies and establishing goals and priorities to accelerate technology development.

The new section 456(d) describes the application requirements for the technical assistance program.

Subsection (b) makes conforming changes to EISA's table of contents.

Sec. 6. Coordination of research and development of energy efficient technologies for industry

Section 6 amends section 6(a) of the American Energy Manufacturing Technical Corrections Act (Public Law 112–210) to make technical corrections.

COST AND BUDGETARY CONSIDERATIONS

The Congressional Budget Office estimate of the costs of this measure has been requested but was not received at the time the report was filed. When the Congressional Budget Office completes its cost estimate, it will be posted on the internet at www.cbo.gov.

REGULATORY IMPACT EVALUATION

In compliance with paragraph 11(b) of rule XXVI of the Standing Rules of the Senate, the Committee makes the following evaluation of the regulatory impact which would be incurred in carrying out S. 2300. The bill is not a regulatory measure in the sense of imposing Government-established standards or significant economic responsibilities on private individuals and businesses.

No personal information would be collected in administering the program. Therefore, there would be no impact on personal privacy.

Little, if any, additional paperwork would result from the enactment of S. 2300, as ordered reported.

CONGRESSIONALLY DIRECTED SPENDING

S. 2300, as ordered reported, does not contain any congressionally directed spending items, limited tax benefits, or limited tariff benefits as defined in rule XLIV of the Standing Rules of the Senate.

EXECUTIVE COMMUNICATIONS

The testimony provided by the Department of Energy at the September 11, 2019, hearing on S. 2300 follows:

TESTIMONY OF UNDER SECRETARY OF ENERGY MARK W.
MENEZES, U.S. DEPARTMENT OF ENERGY

INTRODUCTION

Chairman Cassidy, Ranking Member Heinrich, and Members of the Subcommittee, it is a privilege and an honor to serve at the Department of Energy (DOE or the Department), which is tasked with, among other important responsibilities: overseeing the Nation's nuclear energy research and development programs; creating and sustaining American leadership in the transition to a global clean energy economy; working effectively with the States on our Nation's energy challenges; and supporting our current, and developing our Nation's future, energy workforce. Thank you for the opportunity to testify today on behalf of the Department regarding legislation pertinent to DOE that is now pending in the Senate.

I have been asked to testify on nine (9) bills today. The Administration continues to review all of these bills. I ap-

preciate the ongoing bipartisan efforts to address our Nation's energy challenges and I look forward to working with the Committee.

ENERGY EFFICIENCY AND RENEWABLE ENERGY

The mission of DOE's Office of Energy Efficiency and Renewable Energy (EERE) is to create and sustain American leadership in the transition to a global clean energy economy. EERE has, among other strategic goals, the aim of: improving the energy efficiency of our nation's homes, buildings, and industries; stimulating the growth of a thriving domestic clean energy manufacturing industry; and increasing the generation of electric power from renewable sources.

S. 2300—Clean Industrial Technology Act

S. 2300, Clean Industrial Technology Act, would amend the Energy Independence and Security Act of 2007, to establish a program to incent innovation and to enhance the industrial competitiveness of the United States but only if the technologies also reduce greenhouse gas emissions of non-power industrial sectors.

The Department will continue to review the legislation and looks forward to working with Congress as the legislative process moves forward.

CONCLUSION

Thank you again for the opportunity to be here today. The Department appreciates the ongoing bipartisan efforts to address our Nation's energy challenges, and looks forward to working with the Committee on the legislation on today's agenda and any future legislation. I would be happy to answer your questions.

CHANGES IN EXISTING LAW

In compliance with paragraph 12 of rule XXVI of the Standing Rules of the Senate, the changes in existing law made by S. 2300, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italic, existing law in which no change is proposed is shown in roman):

THE ENERGY INDEPENDENCE AND SECURITY ACT OF 2007

Public Law 110–140 (As Amended)

AN ACT To move the United States toward greater energy independence and security, to increase the production of clean renewable fuels, to protect consumers, to increase the efficiency of products, buildings, and vehicles, to promote research on and deploy greenhouse gas capture and storage options, and to improve the energy performance of the Federal Government, and for other purposes

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SECTION 1. SHORT TITLE; TABLE OF CONTENTS.

(a) **SHORT TITLE.**—This Act may be cited as the “Energy Independence and Security Act of 2007”.

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

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TITLE IV—ENERGY SAVINGS IN BUILDINGS AND INDUSTRY						
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Subtitle D—Industrial Energy Efficiency						

Sec. 451. Industrial energy efficiency.

Sec. 452. Energy-intensive industries program.

Sec. 453. Energy efficiency for data center buildings.

Sec. 454. *Industrial Emissions Reduction Technology Development Program.*

Sec. 455. *Industrial Technology Innovation Advisory Committee.*

Sec. 456. *Technical Assistance Program to Implement Industrial Emissions Reduction.*

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TITLE IV—ENERGY SAVINGS IN BUILDINGS AND INDUSTRY

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Subtitle D—Industrial Energy Efficiency

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SEC. 454. INDUSTRIAL EMISSIONS REDUCTION TECHNOLOGY DEVELOPMENT PROGRAM.

(a) **DEFINITIONS.**—*In this section:*

(1) **DIRECTOR.**—*The term “Director” means the Director of the Office of Science and Technology Policy.*

(2) **ELIGIBLE ENTITY.**—*The term “eligible entity” means—*

(A) *a scientist or other individual with knowledge and expertise in emissions reduction;*

(B) *an institution of higher education;*

(C) *a nongovernmental organization;*

(D) *a National Laboratory;*

(E) *a private entity; and*

(F) *a partnership or consortium of 2 or more entities described in subparagraphs (B) through (E).*

(3) **EMISSIONS REDUCTION.**—

(A) **IN GENERAL.**—*The term “emissions reduction” means the reduction, to the maximum extent practicable, of net nonwater greenhouse gas emissions to the atmosphere by energy services and industrial processes.*

(B) **EXCLUSION.**—*The term “emissions reduction” does not include the elimination of carbon embodied in the principal products of industrial manufacturing.*

(4) **INSTITUTION OF HIGHER EDUCATION.**—*The term “institution of higher education” has the meaning given the term in section 101 of the Higher Education Act of 1965 (20 U.S.C. 1001).*

(5) **PROGRAM.**—*The term “program” means the program established under subsection (b)(1).*

(b) *INDUSTRIAL EMISSIONS REDUCTION TECHNOLOGY DEVELOPMENT PROGRAM.*—

(1) *IN GENERAL.*—Not later than 1 year after the date of enactment of the CIT Act of 2019, the Secretary, in consultation with the Director, the heads of relevant Federal agencies, National Laboratories, industry, and institutions of higher education, shall establish a crosscutting industrial emissions reduction technology development program of research, development, demonstration, and commercial application to further the development and commercialization of innovative technologies that—

(A) increase the technological and economic competitiveness of industry and manufacturing in the United States;

(B) increase the viability and competitiveness of United States industrial technology exports; and

(C) achieve emissions reduction in nonpower industrial sectors.

(2) *COORDINATION.*—In carrying out the program, the Secretary shall—

(A) coordinate with each relevant office in the Department and any other Federal agency;

(B) coordinate and collaborate with the Industrial Technology Innovation Advisory Committee established under section 455; and

(C) coordinate and seek to avoid duplication with the energy-intensive industries program established under section 452.

(3) *LEVERAGE OF EXISTING RESOURCES.*—In carrying out the program, the Secretary shall leverage, to the maximum extent practicable—

(A) existing resources and programs of the Department and other relevant Federal agencies; and

(B) public-private partnerships.

(c) *FOCUS AREAS.*—The program shall focus on—

(1) industrial production processes, including technologies and processes that—

(A) achieve emissions reduction in high-emissions industrial materials production processes, including production processes for iron, steel, steel mill products, aluminum, cement, glass, pulp, paper, and industrial ceramics;

(B) achieve emissions reduction in medium- and high-temperature heat generation, including—

(i) through electrification of heating processes;

(ii) through renewable heat generation technology;

(iii) through combined heat and power; and

(iv) by switching to alternative fuels, including hydrogen and nuclear energy;

(C) achieve emissions reduction in chemical production processes, including by incorporating, if appropriate and practicable, principles, practices, and methodologies of sustainable, green chemistry and engineering;

(D) leverage smart manufacturing technologies and principles, digital manufacturing technologies, and advanced data analytics to develop advanced technologies and prac-

tices in information, automation, monitoring, computation, sensing, modeling, and networking to—

(i) model and simulate manufacturing production lines;

(ii) monitor and communicate production line status;

(iii) manage and optimize energy productivity and cost throughout production; and

(iv) model, simulate, and optimize the energy efficiency of manufacturing processes;

(E) minimize the negative environmental impacts of manufacturing and sustainable chemistry while conserving energy and resources, including—

(i) by designing products that enable reuse, refurbishment, remanufacturing, and recycling;

(ii) by minimizing waste from industrial processes, including through the reuse of waste as other resources in other industrial processes for mutual benefit; and

(iii) by increasing resource efficiency; and

(F) increase the energy efficiency of industrial processes;

(2) alternative materials that produce fewer emissions during production and result in fewer emissions during use, including—

(A) innovative building materials;

(B) high-performance lightweight materials; and

(C) substitutions for critical materials and minerals;

(3) development of net-zero emissions liquid and gaseous fuels;

(4) emissions reduction in shipping, aviation, and long distance transportation;

(5) carbon capture technologies for industrial processes;

(6) other technologies that achieve net-zero emissions in nonpower industrial sectors, as determined by the Secretary, in consultation with the Director; and

(7) high-performance computing to develop advanced materials and manufacturing processes contributing to the focus areas described in paragraphs (1) through (6), including—

(A) modeling, simulation, and optimization of the design of energy efficient and sustainable products; and

(B) the use of digital prototyping and additive manufacturing to enhance product design.

(d) GRANTS, CONTRACTS, COOPERATIVE AGREEMENTS, AND DEMONSTRATION PROJECTS.—

(1) GRANTS.—In carrying out the program, the Secretary shall award grants on a competitive basis to eligible entities for projects that the Secretary determines would best achieve the goals of the program.

(2) CONTRACTS AND COOPERATIVE AGREEMENTS.—In carrying out the program, the Secretary may enter into contracts and cooperative agreements with eligible entities and Federal agencies for projects that the Secretary determines would further the purposes of the program.

(3) DEMONSTRATION PROJECTS.—In supporting technologies developed under this section, the Secretary shall fund demonstration projects that test and validate technologies described in subsection (c).

(4) *APPLICATION.*—An entity seeking funding or a contract or agreement under this subsection shall submit to the Secretary an application at such time, in such manner, and containing such information as the Secretary may require.

(5) *COST SHARING.*—In awarding funds under this section, the Secretary shall require cost sharing in accordance with section 988 of the Energy Policy Act of 2005 (42 U.S.C. 16352).

SEC. 455. INDUSTRIAL TECHNOLOGY INNOVATION ADVISORY COMMITTEE.

(a) *DEFINITIONS.*—In this section:

(1) *COMMITTEE.*—The term “Committee” means the Industrial Technology Innovation Advisory Committee established under subsection (b).

(2) *DIRECTOR.*—The term “Director” means the Director of the Office of Science and Technology Policy.

(3) *EMISSIONS REDUCTION.*—The term ‘emissions reduction’ has the meaning given the term in section 454(a).

(4) *PROGRAM.*—The term “program” means the industrial emissions reduction technology development program established under section 454(b)(1).

(b) *ESTABLISHMENT.*—Not later than 180 days after the date of enactment of the CIT Act of 2019, the Secretary, in consultation with the Director, shall establish an advisory committee, to be known as the ‘Industrial Technology Innovation Advisory Committee’.

(c) *MEMBERSHIP.*—

(1) *APPOINTMENT.*—The Committee shall be comprised of not fewer than 14 members and not more than 18 members, who shall be appointed by the Secretary, in consultation with the Director.

(2) *REPRESENTATION.*—Members appointed pursuant to paragraph (1) shall include—

(A) not less than 1 representative of each relevant Federal agency, as determined by the Secretary;

(B) the Chair of the Secretary of Energy Advisory Board, if that position is filled;

(C) not less than 2 representatives of labor groups;

(D) not less than 3 representatives of the research community, which shall include academia and National Laboratories;

(E) not less than 2 representatives of nongovernmental organizations;

(F) not less than 6 representatives of small- and large-scale industry, the collective expertise of which shall cover every focus area described in section 454(c); and

(G) any other individuals the Secretary, in coordination with the Director, determines to be necessary to ensure that the Committee is comprised of a diverse group of representatives of industry, academia, independent researchers, and public and private entities.

(3) *CHAIR.*—The Secretary shall designate a member of the Committee to serve as Chair.

(d) *DUTIES.*—

(1) *IN GENERAL.*—The Committee shall—

(A) in consultation with the Secretary and the Director, propose missions and goals for the program, which shall be consistent with the purposes of the program described in section 454(b)(1); and

(B) advise the Secretary with respect to the program—

(i) by identifying and evaluating any technologies being developed by the private sector relating to the focus areas described in section 454(c);

(ii) by identifying technology gaps in the private sector in those focus areas, and making recommendations to address those gaps;

(iii) by surveying and analyzing factors that prevent the adoption of emissions reduction technologies by the private sector; and

(iv) by recommending technology screening criteria for technology developed under the program to encourage adoption of the technology by the private sector; and

(C) develop the strategic plan described in paragraph (2).

(2) STRATEGIC PLAN.—

(A) PURPOSE.—The purpose of the strategic plan developed under paragraph (1)(C) is to achieve the goals of the program in the focus areas described in section 454(c).

(B) CONTENTS.—The strategic plan developed under paragraph (1)(C) shall—

(i) specify near-term and long-term qualitative and quantitative objectives relating to each focus area described in section 454(c), including research, development, demonstration, and commercial application objectives;

(ii) specify the anticipated timeframe for achieving the objectives specified under clause (i);

(iii) include plans for developing emissions reduction technologies that are globally cost-competitive;

(iv) identify the public and private costs of achieving the objectives specified under clause (i); and

(v) estimate the economic and employment impact in the United States of achieving those objectives.

(e) MEETINGS.—

(1) FREQUENCY.—The Committee shall meet not less frequently than 2 times per year, at the call of the Chair.

(2) INITIAL MEETING.—Not later than 30 days after the date on which the members are appointed under subsection (b), the Committee shall hold its first meeting.

(f) COMMITTEE REPORT.—

(1) IN GENERAL.—Not later than 2 years after the date of enactment of the CIT Act of 2019, and not less frequently than once every 3 years thereafter, the Committee shall submit to the Secretary a report on the progress of achieving the purposes of the program.

(2) CONTENTS.—The report under paragraph (1) shall include—

(A) a description of any technology innovation opportunities identified by the Committee;

(B) a description of any technology gaps identified by the Committee under subsection (d)(1)(B)(ii);

(C) recommendations for improving technology screening criteria and management of the program;

(D) an evaluation of the progress of the program and the research and development funded under the program;

(E) any recommended changes to the focus areas of the program described in section 454(c);

(F) a description of the manner in which the Committee has carried out the duties described in subsection (d)(1) and any relevant findings as a result of carrying out those duties;

(G) if necessary, an update to the strategic plan developed by the Committee under subsection (d)(1)(C);

(H) the progress made in achieving the goals set out in that strategic plan;

(I) a review of the management, coordination, and industry utility of the program;

(J) an assessment of the extent to which progress has been made under the program in developing commercial, cost-competitive technologies in each focus area described in section 454(c); and

(K) an assessment of the effectiveness of the program in coordinating efforts within the Department and with other Federal agencies to achieve the purposes of the program.

(g) **REPORT TO CONGRESS.**—Not later than 60 days after receiving a report from the Committee under subsection (f), the Secretary shall submit a copy of that report to the Committees on Appropriations and Science, Space, and Technology of the House of Representatives, the Committees on Appropriations and Energy and Natural Resources of the Senate, and any other relevant Committee of Congress.

(h) **APPLICABILITY OF FEDERAL ADVISORY COMMITTEE ACT.**—Except as otherwise provided in this section, the Federal Advisory Committee Act (5 U.S.C. App.) shall apply to the Committee.

SEC. 456. TECHNICAL ASSISTANCE PROGRAM TO IMPLEMENT INDUSTRIAL EMISSIONS REDUCTION.

(a) **DEFINITIONS.**—In this section:

(1) **ELIGIBLE ENTITY.**—The term “eligible entity” means—

(A) a State;

(B) a unit of local government;

(C) a territory or possession of the United States;

(D) a relevant State or local office, including an energy office;

(E) a tribal organization (as defined in section 3765 of title 38, United States Code);

(F) an institution of higher education; and

(G) a private entity.

(2) **EMISSIONS REDUCTION.**—The term “emissions reduction” has the meaning given the term in section 454(a).

(3) **INSTITUTION OF HIGHER EDUCATION.**—The term “institution of higher education” has the meaning given the term in section 101 of the Higher Education Act of 1965 (20 U.S.C. 1001).

(4) **PROGRAM.**—The term “program” means the program established under subsection (b).

(b) *ESTABLISHMENT.*—Not later than 180 days after the date of enactment of the CIT Act of 2019, the Secretary shall establish a program to provide technical assistance to eligible entities to carry out an activity described in subsection (c).

(c) *ACTIVITIES DESCRIBED.*—An activity referred to in subsection (b) is any of the following activities carried out for the purpose of achieving emissions reduction in nonpower industrial sectors:

(1) Adopting emissions reduction technologies.

(2) Establishing goals and priorities to accelerate the development and evaluation of relevant technologies.

(3) Developing collaborations across States, local governments, and territories and possessions of the United States.

(4) Reviewing the appropriate emissions reduction technologies available for a particular eligible entity.

(5) Developing a roadmap for implementing emissions reduction technologies for a particular eligible entity.

(6) Any other activity determined appropriate by the Secretary.

(d) *APPLICATIONS.*—

(1) *IN GENERAL.*—An eligible entity desiring technical assistance under the program shall submit to the Secretary an application at such time, in such manner, and containing such information as the Secretary may require.

(2) *APPLICATION PROCESS.*—The Secretary shall seek applications for technical assistance under the program on a periodic basis, but not less frequently than once every 12 months.

(3) *FACTORS FOR CONSIDERATION.*—In selecting eligible entities for technical assistance under the program, the Secretary shall—

(A) give priority to—

(i) activities carried out with technical assistance under the program that have the greatest potential for achieving emissions reduction in nonpower industrial sectors;

(ii) activities carried out in a State in which there are active or inactive industrial facilities that may be used or retrofitted to carry out activities under the focus areas described in section 454(c); and

(iii) activities carried out in an economically distressed area (as described in section 301(a) of the Public Works and Economic Development Act of 1965 (42 U.S.C. 3161(a))); and

(B) ensure that—

(i) there is geographic diversity among the eligible entities selected; and

(ii) the activities carried out with technical assistance under the program reflect a majority of the focus areas described in section 454(c).

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AMERICAN ENERGY MANUFACTURING TECHNICAL CORRECTIONS ACT

Public Law 112–210

AN ACT To allow for innovations and alternative technologies that meet or exceed desired energy efficiency goals, and to make technical corrections to existing Federal energy efficiency laws to allow American manufacturers to remain competitive

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SEC. 6. COORDINATION OF RESEARCH AND DEVELOPMENT OF ENERGY EFFICIENT TECHNOLOGIES FOR INDUSTRY.

(a) IN GENERAL.—As part of the research and development activities of the [Industrial Technologies Program] *Advanced Manufacturing Office* of the Department of Energy, the Secretary of Energy (referred to in this section as the “Secretary”) shall establish, as appropriate, collaborative research and development partnerships with other programs within the [Office of Energy Efficiency and Renewable Energy (including the Building Technologies Program), the Office of Electricity Delivery and Energy Reliability, and the Office of Science] *Department of Energy* that—

(1) leverage the research and development expertise of those programs to promote early stage energy efficiency technology development;

(2) support the use of innovative manufacturing processes and applied research for development, demonstration, and commercialization of new technologies and processes to improve efficiency (including improvements in efficient use of water), reduce emissions, reduce industrial waste, and improve industrial cost-competitiveness; and

(3) apply the knowledge and expertise of the [Industrial Technologies Program] *Advanced Manufacturing Office* to help achieve the program goals of the other programs.

(b) REPORTS.—Not later than 2 years after December 18, 2012, and biennially thereafter, the Secretary shall submit to Congress a report that describes actions taken to carry out subsection (a) and the results of those actions.

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