[118H7685.EH]

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(Original Signature of Member)

119TH CONGRESS
1ST SESSION

H. R. _____

To strengthen and enhance the competitiveness of American industry through the research and development of advanced technologies to improve the efficiency of cement, concrete, and asphalt production, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

M__. _____ introduced the following bill; which was referred to the Committee on _____

A BILL

To strengthen and enhance the competitiveness of American industry through the research and development of advanced technologies to improve the efficiency of cement, concrete, and asphalt production, 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 ''Innovative Mitigation Partnerships for Asphalt and Concrete Technologies Act'' or the ''IMPACT Act''.

SEC. 2. ADVANCED CEMENT, CONCRETE, AND ASPHALT PRODUCTION RESEARCH PROGRAM.

(a) PROGRAM.—Part I of subtitle C of title V of division D of the Infrastructure Investment and Jobs Act (Public Law 117–58) is amended by adding at the end the following new section:

"SEC. 40523. ADVANCED CEMENT, CONCRETE, AND ASPHALT PRODUCTION RESEARCH PROGRAM.

''(a) DEFINITIONS.—In this section:

''(1) ADVANCED PRODUCTION.—The term 'advanced production' means production of cement, concrete, or asphalt with one or more of the following improvements with respect to the production of commercially available cement, concrete, or asphalt:

''(A) Improved cost-effectiveness.

''(B) Improved quality, durability, engineering performance, and resilience.

''(C) Improved efficiency of resource consumption and material demand.

''(2) ALTERNATIVE FUELS.—The term 'alternative fuels' means any solid, liquid, or gaseous materials, or a combination thereof, used to replace or supplement any portion of fuels used in combustion or pyrolysis for low-emissions cement, concrete, or asphalt.

''(3) COMMERCIALLY AVAILABLE.—The term 'commercially available', with respect to cement, concrete, and asphalt, means that the cement, concrete, or asphalt is—

''(A) readily and widely available for purchase in the United States; and

''(B) produced using a production method of cement, concrete, or asphalt products, as applicable, that is widely in use.

''(4) ELIGIBLE ENTITY.—The term 'eligible entity' means any of the following:

''(A) An institution of higher education.

''(B) An appropriate State or Federal entity, including a federally funded research and development center of the Department.

''(C) A nonprofit research institution.

''(D) A private entity.

''(E) Any other relevant entity the Secretary determines appropriate.

''(F) A partnership or consortium of two or more entities described in subparagraphs (A) through (E).

''(5) ENGINEERING PERFORMANCE-BASED STANDARD.—The term 'engineering performance-based standard' means an existing engineering

standard with respect to which the requirements applicable to such standard are stated in terms of required results, with criteria for verifying compliance rather than specific composition, design, or procedure.

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

''(7) LOW-EMISSIONS CEMENT, CONCRETE, AND ASPHALT.—The term 'low-emissions cement, concrete, and asphalt' means cement, concrete, asphalt binder, or asphalt mixture that reduces, to the maximum extent practicable, greenhouse gas or directly-related copollutant emissions to levels below commercially available cement, concrete, or asphalt.

''(8) RURAL AREA.—The term 'rural area' has the meaning given such term in section 343(a) of the Consolidated Farm and Rural Development Act (7 U.S.C. 1991(a)).

''(b) ESTABLISHMENT.—Not later than 180 days after the date of the enactment of this section, the Secretary shall establish a program of research, development, demonstration, and commercial application of advanced tools, technologies, and methods for advanced production

and use of low-emissions cement, concrete, and asphalt in order to accomplish the following:

''(1) Increase the technological and economic competitiveness of industry and production in the United States.

''(2) Expand and increase the stability of supply chains through enhanced domestic production, nearshoring, and cooperation with allies.

''(3) Achieve measurable greenhouse gas or directly related copollutant emissions reductions in the production processes for cement, concrete, and asphalt products.

''(4) Create quality domestic jobs.

''(c) REQUIREMENTS.—In carrying out the program under subsection (b), the Secretary shall carry out the following:

''(1) Coordinate with the programs and activities authorized under title VI of division Z of the Consolidated Appropriations Act, 2021 (relating to industrial and manufacturing technologies) and the amendments made by such title.

''(2) Coordinate across all relevant program offices of the Department, including the Office of Science, the Advanced Research Projects Agency-Energy, the Office of Clean Energy Demonstrations,

the Office of Energy Efficiency and Renewable Energy, the Office of Fossil Energy, the Office of Industrial Efficiency and Decarbonization, the Office of Manufacturing and Energy Supply Chains, and the Office of Nuclear Energy.

''(3) Leverage, to the extent practicable, the research infrastructure of the Department, including scientific computing user facilities, x-ray light sources, neutron scattering facilities, and nanoscale science research centers.

''(4) Conduct research, development, demonstration, and commercial application of the advanced production of low-emissions cement, concrete, and asphalt that have the potential to increase domestic production and employment in both advanced and commercially available processes.

''(d) STRATEGIC PLAN.—

''(1) IN GENERAL.—Not later than 180 days after the establishment of the program under subsection (b), the Secretary shall develop a 5-year strategic plan identifying research, development, demonstration, and commercial application goals for such program. The Secretary shall submit such plan to the Committee on Science, Space, and Technology

of the House of Representatives and the Committee on Energy and Natural Resources of the Senate.

''(2) CONTENTS.—The strategic plan under paragraph (1) shall—

''(A) identify programs at the Department related to the advanced production of low-emissions cement, concrete, and asphalt that support the research, development, demonstration, and commercial application activities described in this section, and the demonstration projects under subsection (f);

''(B) establish technological and programmatic goals to achieve the requirements specified in subsection (c); and

''(C) include timelines for the accomplishment of such goals developed under the plan.

''(3) UPDATES TO PLAN.—Not less than once every two years, the Secretary shall submit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Energy and Natural Resources of the Senate an updated version of the strategic plan under paragraph (1).

''(e) FOCUS AREAS.—In carrying out the program under subsection (b), the Secretary shall focus on the following:

''(1) Carbon capture technologies for low-emissions cement, concrete, and asphalt production processes, which may include the following:

''(A) Oxycombustion and chemical looping technologies.

''(B) Precombustion technologies.

''(C) Post combustion technologies.

''(D) Direct carbon dioxide separation technologies.

''(2) Materials, technologies, inputs, and processes that—

''(A) produce fewer greenhouse gas or directly related copollutant emissions during production, use, and end use of cement, concrete, and asphalt; or

''(B) provide quality, durability, resilience, engineering, or other performance metrics equal to or greater than commercially available products.

''(3) Medium- and high-temperature heat-generation technologies used for the advanced produc-

tion of low-emissions cement, concrete, and asphalt, which may include the following:

''(A) Alternative fuels.

''(B) Renewable heat-generation and storage technology.

''(C) Electrification of heating processes.

''(D) Other clean heat-generation technologies and sources.

''(4) Technologies and practices that increase the efficiency of energy use, natural resource consumption, or material demand, which may include the following:

''(A) Designing products that encourage reuse, refurbishment, remanufacturing, and recycling.

''(B) Minimizing waste, including waste heat, from low-emissions cement, concrete, and asphalt production processes, including through the reuse of waste as a resource in other industrial processes for mutual benefit.

''(C) Increasing the overall energy efficiency of low-emissions cement, concrete, and asphalt production processes, including through life cycle assessments.

''(5) Technologies and approaches to reduce greenhouse gas or directly related copollutant emissions from the advanced production of cement, concrete, and asphalt.

''(6) High-performance computing to develop advanced materials and production processes that may contribute to the focus areas described in paragraphs (1) through (5), including the following:

''(A) Modeling, simulation, and optimization of the design of cost-effective and energy-efficient products and processes.

''(B) The use of digital prototyping and additive production to enhance product design.

''(7) Advanced sensor technologies and methods to monitor and quantify the performance of low-emissions cement, concrete, and asphalt materials at scale and under a variety of conditions.

''(8) Technologies that can be retrofitted at cement, concrete, and asphalt plants that represent the most common facility types in the United States and in other countries, with consideration for field validation of such retrofits.

''(9) Best practices for data standardization and data sharing tools and technologies, in coordination with relevant Federal agencies.

''(10) Fundamental research in chemistry and materials science to identify the following:

''(A) Novel materials and alternative domestic feedstocks and processing operations for the advanced production of low-emissions cement, concrete, and asphalt.

''(B) Improved understanding by eligible entities of the mechanisms that determine the performance and durability of low-emissions cement, concrete, and asphalt over time.

''(f) DEMONSTRATIONS.—

''(1) ESTABLISHMENT.—Not later than 180 days after the date of the enactment of this section, the Secretary, in carrying out the program under subsection (b), and in collaboration with the Secretary of Transportation, the Administrator of General Services, industry partners, institutions of higher education, and National Laboratories, shall support demonstrations of advanced production of low-emissions cement, concrete, and asphalt that uses either—

''(A) a single technology or practice; or

''(B) a combination of multiple technologies or practices.

''(2) SELECTION REQUIREMENTS.—In carrying out the demonstrations under paragraph (1), the Secretary shall select eligible entities to carry out demonstration projects and to the maximum extent practicable—

''(A) encourage regional diversity among eligible entities, including participation by entities located in rural areas;

''(B) encourage technological diversity among eligible entities; and

''(C) ensure that specific projects selected—

''(i) expand on the existing technology demonstration programs of the Department;

''(ii) are based on the extent of greenhouse gas emissions reductions achieved; and

''(iii) prioritize leveraging matching funds from non-Federal sources.

''(3) REPORTS.—The Secretary shall submit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Energy and Natural Resources of the Senate—

''(A) not less frequently than once every two years for the duration of the demonstrations under paragraph (1), a report describing the performance of such demonstrations; and

''(B) if any such demonstration is terminated, an assessment of the success of, and education provided by, the measures carried out by such demonstration.

''(4) TERMINATION.—The Secretary may terminate the demonstrations under paragraph (1) if the Secretary determines that sufficient low-emissions cement, concrete, and asphalt produced through advanced production are commercially available domestically at a price comparable to the price of cement, concrete, and asphalt produced through traditional methods of production.

''(g) TECHNICAL ASSISTANCE PROGRAM.—

''(1) IN GENERAL.—The Secretary, in consultation with the Secretary of Transportation, the Secretary of Commerce (acting through the Director of the National Institute of Standards and Technology), the Administrator of General Services, the Administrator of the Environmental Protection Agency, and appropriate representatives of relevant standards development organizations, shall provide

technical assistance to eligible entities to carry out an activity described in paragraph (2) to promote the commercial application of technologies for the production and use of low-emissions cement, concrete, and asphalt.

''(2) ACTIVITIES DESCRIBED.—An activity referred to in paragraph (1) is any of the following:

''(A) Efforts related to collecting data that could be used in the updating of local codes, specifications, and standards to engineering performance-based standards.

''(B) A lifecycle assessment of the final product.

''(C) An environmental impact comparison between different cements, concretes, and asphalts.

''(D) A techno-economic assessment.

''(E) An environmental permitting or other regulatory process.

''(F) An evaluation or testing activity.

''(G) Any other activity that promotes the commercial application of technologies developed through the program under subsection (b).

''(3) APPLICATIONS.—The Secretary shall seek applications for technical assistance under this subsection—

''(A) on a competitive basis; and

''(B) on a periodic basis, but not less frequently than once every 12 months.

''(4) REGIONAL CENTERS.—The Secretary may designate or establish one or more regional centers to provide technical assistance to eligible entities to carry out the activity described in paragraph (2)(A).

''(h) ADDITIONAL COORDINATION.—

''(1) MANUFACTURING USA.—In carrying out this section the Secretary shall consider the following:

''(A) Leveraging the resources of relevant existing Manufacturing USA Institutes described in section 34(d) of the National Institute of Standards and Technology Act (15 U.S.C. 278s(d)).

''(B) Integrating program activities into a relevant existing Manufacturing USA Institute.

''(C) Awarding financial assistance, consistent with section 34(e) of the National Institute of Standards and Technology Act (15 U.S.C. 278s(e)), to a person or group of per-

sons to assist the person or group of persons in planning, establishing, or supporting a Manufacturing U.S.A. Institute focused on advanced production of low-emissions cement, concrete, and asphalt.

''(2) OTHER FEDERAL AGENCIES.—In carrying out this section, the Secretary shall coordinate with other Federal agencies, including the Department of Defense, the Department of Transportation, and the National Institute of Standards and Technology, that are carrying out research and development initiatives to increase industrial competitiveness and achieve measurable greenhouse gas or directly related copollutant emissions reductions through the advanced production of cement, concrete, and asphalt.

''(i) SUNSET.—This section shall terminate seven years after the date of the enactment of this section.

''(j) RESEARCH SECURITY.—The activities authorized under this section shall be applied in a manner consistent with subtitle D of title VI of the Research and Development, Competition, and Innovation Act (enacted as division B of Public Law 117–167 (42 U.S.C. 19231 et seq.)).

''(k) RULE OF CONSTRUCTION.—Nothing in this section may be construed to amend, alter, or affect the authorities of the Secretary to define, establish, or enforce new environmental industry standards for, or related to, cement, concrete, or asphalt.''.

(b) CLERICAL AMENDMENT.—The table of contents in section 1(b) of the Infrastructure Investment and Jobs Act is amended by inserting after the item relating to section 40522 the following new item:

''Sec. 40523. Advanced cement, concrete, and asphalt production research program.''.