

118TH CONGRESS
1ST SESSION

S. 3439

To strengthen and enhance the competitiveness of cement, concrete, asphalt binder, and asphalt mixture production in the United States through the research, development, demonstration, and commercial application of technologies to reduce emissions from cement, concrete, asphalt binder, and asphalt mixture production, and for other purposes.

IN THE SENATE OF THE UNITED STATES

DECEMBER 7, 2023

Mr. COONS (for himself and Mr. TILLIS) introduced the following bill; which was read twice and referred to the Committee on Energy and Natural Resources

A BILL

To strengthen and enhance the competitiveness of cement, concrete, asphalt binder, and asphalt mixture production in the United States through the research, development, demonstration, and commercial application of technologies to reduce emissions from cement, concrete, asphalt binder, and asphalt mixture production, and for other purposes.

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

1 **SECTION 1. SHORT TITLE.**

2 This Act may be cited as the “Concrete and Asphalt
3 Innovation Act of 2023”.

4 **SEC. 2. DEFINITIONS.**

5 In this Act:

6 (1) **BASELINE EMBODIED GREENHOUSE GAS**
7 **EMISSIONS.**—The term “baseline embodied green-
8 house gas emissions” has the meaning given the
9 term in section 458(b) of the Energy Independence
10 and Security Act of 2007.

11 (2) **COMMERCIALLY AVAILABLE.**—The term
12 “commercially available” has the meaning given the
13 term in section 458(b) of the Energy Independence
14 and Security Act of 2007.

15 (3) **EMBODIED GREENHOUSE GAS EMISSIONS.**—
16 The term “embodied greenhouse gas emissions” has
17 the meaning given the term in section 458(b) of the
18 Energy Independence and Security Act of 2007.

19 (4) **ENGINEERING PERFORMANCE STANDARD.**—
20 The term “engineering performance standard” has
21 the meaning given the term in section 458(b) of the
22 Energy Independence and Security Act of 2007.

23 (5) **ENVIRONMENTAL PRODUCT DECLARA-**
24 **TION.**—The term “environmental product declara-
25 tion” means a product-specific type III environ-
26 mental product declaration that—

- 1 (A) conforms to ISO Standard 14025;
2 (B) assesses the embodied greenhouse gas
3 emissions of the product;
4 (C) assesses copollutant emissions; and
5 (D) allows for environmental impact com-
6 parisons between different cements, concretes,
7 asphalt binders, and asphalt mixtures produced
8 using the same product category rule.

9 (6) LOW-EMISSIONS CEMENT, CONCRETE, AS-
10 PHALT BINDER, OR ASPHALT MIXTURE.—The term
11 “low-emissions cement, concrete, asphalt binder, or
12 asphalt mixture” has the meaning given the term in
13 section 458(b) of the Energy Independence and Se-
14 curity Act of 2007.

15 (7) PORTLAND CEMENT.—The term “portland
16 cement” means any hydraulic cement produced by
17 pulverizing portland-cement clinker, usually includ-
18 ing calcium sulfate and other ingredients as identi-
19 fied in specifications.

20 (8) SECRETARY.—The term “Secretary” means
21 the Secretary of Energy.

22 (9) TASK FORCE.—The term “Task Force”
23 means the Interagency Task Force for Concrete and
24 Asphalt Innovation established under section 7(a).

1 **SEC. 3. LOW-EMISSIONS CEMENT, CONCRETE, ASPHALT**
 2 **BINDER, AND ASPHALT MIXTURE PRODUC-**
 3 **TION RESEARCH PROGRAM.**

4 (a) IN GENERAL.—Subtitle D of title IV of the En-
 5 ergy Independence and Security Act of 2007 (42 U.S.C.
 6 17111 et seq.) is amended by adding at the end the fol-
 7 lowing:

8 **“SEC. 458. LOW-EMISSIONS CEMENT, CONCRETE, ASPHALT**
 9 **BINDER, AND ASPHALT MIXTURE PRODUC-**
 10 **TION RESEARCH PROGRAM.**

11 “(a) PURPOSE.—The purpose of this section is to ad-
 12 vance the research and development of innovative tech-
 13 nologies aimed at—

14 “(1) achieving significant greenhouse gas emis-
 15 sions and copollutant emissions reductions in the
 16 production processes for cement, concrete, asphalt
 17 binder, and asphalt mixture products;

18 “(2) increasing the technological and economic
 19 competitiveness of industry and production in the
 20 United States;

21 “(3) increasing the stability of supply chains
 22 through enhanced domestic production, nearshoring,
 23 and cooperation with allies; and

24 “(4) creating quality domestic jobs.

25 “(b) DEFINITIONS.—In this section:

1 “(1) ALTERNATIVE FUELS.—The term ‘alter-
 2 native fuels’ means any solid, liquid, or gaseous ma-
 3 terial, or any combination of those materials, used to
 4 replace or supplement any portion of fuels used in
 5 combustion or pyrolysis for the production of low-
 6 emissions cement, concrete, asphalt binder, or as-
 7 phalt mixture.

8 “(2) BASELINE EMBODIED GREENHOUSE GAS
 9 EMISSIONS.—The term ‘baseline embodied green-
 10 house gas emissions’ means the reported regional in-
 11 dustry averages of embodied greenhouse gas emis-
 12 sions of cement, concrete, asphalt binder, or asphalt
 13 mixture, as determined by the Secretary under sub-
 14 section (i)(1).

15 “(3) COMMERCIALLY AVAILABLE.—The term
 16 ‘commercially available’, with respect to cement, con-
 17 crete, asphalt binder, and asphalt mixture, means
 18 that the cement, concrete, asphalt binder, or asphalt
 19 mixture is, or the component materials of cement,
 20 concrete, asphalt binder, and asphalt mixture are—

21 “(A) readily and widely available for public
 22 purchase in the United States; and

23 “(B) produced using a production method
 24 that is widely in use.

1 “(4) ELIGIBLE ENTITY.—The term ‘eligible en-
2 tity’ means—

3 “(A) a Federal entity, including a federally
4 funded research and development center of the
5 Department;

6 “(B) a State, territory, or possession of
7 the United States;

8 “(C) a municipality of a State or equiva-
9 lent geographic area in a territory or possession
10 of the United States;

11 “(D) a State energy office (as defined in
12 section 124(a) of the Energy Policy Act of 2005
13 (42 U.S.C. 15821(a)));

14 “(E) a State energy financing institution
15 (as defined in section 1701 of the Energy Pol-
16 icy Act of 2005 (42 U.S.C. 16511));

17 “(F) an institution of higher education;

18 “(G) a nonprofit research institution;

19 “(H) a private entity;

20 “(I) any other relevant entity the Secretary
21 determines to be appropriate; and

22 “(J) a partnership or consortium of 2 or
23 more entities described in any of subparagraphs
24 (A) through (I).

1 “(5) EMBODIED GREENHOUSE GAS EMIS-
 2 SIONS.—The term ‘embodied greenhouse gas emis-
 3 sions’ means greenhouse gas emissions, measured in
 4 global warming potential, generated as a result of
 5 the production of a material, including mining, refin-
 6 ing, manufacturing, and shipping.

7 “(6) ENGINEERING PERFORMANCE STAND-
 8 ARD.—The term ‘engineering performance standard’
 9 means a standard in which the requirements are
 10 stated in terms of required results, with criteria for
 11 verifying compliance rather than specific composi-
 12 tion, design, or procedure.

13 “(7) LOW-EMISSIONS CEMENT, CONCRETE, AS-
 14 PHALT BINDER, OR ASPHALT MIXTURE.—The term
 15 ‘low-emissions cement, concrete, asphalt binder, or
 16 asphalt mixture’ means cement, concrete, asphalt
 17 binder, or asphalt mixture, as determined by the
 18 Secretary under subsection (i)(1)—

19 “(A) that has substantially lower embodied
 20 greenhouse gas emissions and copollutant emis-
 21 sions than the baseline embodied greenhouse
 22 gas emissions of the cement, concrete, asphalt
 23 binder, or asphalt mixture, as applicable; and

24 “(B) the substantially lower embodied
 25 greenhouse gas emissions and copollutant emis-

sions of which are achieved through any combination of—

“(i) production processes using low-carbon feedstocks;

“(ii) higher energy efficiency at the level of the cement, concrete, asphalt binder, or asphalt mixture plant;

“(iii) low-carbon fuel substitution at the level of the cement, concrete, asphalt binder, or asphalt mixture plant;

“(iv) local production of, and use of locally sourced material in, the concrete or asphalt mixture, resulting in reduced concrete or asphalt mixture delivery miles and reduced emissions from transportation;

“(v) the reduction of clinker content in the cement component of concrete or the substitution of clinker content with less carbon-intensive alternative materials, such as slag cement, coal ash, natural pozzolans, recycled ground-glass pozzolan, or other supplementary cementitious material;

“(vi) the reduction of petroleum-based asphalt in the asphalt binder component of

1 asphalt mixtures, or the substitution of pe-
2 troleum-based asphalt with less carbon-in-
3 tensive alternative materials such as
4 biobased binder, recycled material, or other
5 alternative;

6 “(vii) the reduction of cement in con-
7 crete or asphalt binder in asphalt mixtures
8 through mixture optimization, including
9 the use of admixtures;

10 “(viii) the capture, storage, or use of
11 point source carbon dioxide emissions dur-
12 ing the cement, concrete, or asphalt binder
13 production process;

14 “(ix) the use and storage of carbon in
15 concrete or asphalt mixture materials;

16 “(x) the use of noncarbonate feed-
17 stocks at the level of the cement plant; or

18 “(xi) other technologies, practices, or
19 processes determined by the Secretary.

20 “(8) NATIONAL LABORATORY.—The term ‘Na-
21 tional Laboratory’ has the meaning given the term
22 in section 2 of the Energy Policy Act of 2005 (42
23 U.S.C. 15801).

24 “(9) RELEVANT CENTERS.—The term ‘relevant
25 Centers’ means—

1 “(A) the Turner-Fairbank Highway Re-
2 search Center;

3 “(B) the William J. Hughes Technical
4 Center;

5 “(C) the U.S. Army Engineer Research
6 and Development Center, including the Con-
7 struction Engineering Research Laboratory;
8 and

9 “(D) the Technical Service Center of the
10 Bureau of Reclamation.

11 “(10) TASK FORCE.—The term ‘Task Force’
12 means the Interagency Task Force for Concrete and
13 Asphalt Innovation established under section 7(a) of
14 the Concrete and Asphalt Innovation Act of 2023.

15 “(c) ESTABLISHMENT OF PROGRAM.—Not later than
16 180 days after the date of enactment of the Concrete and
17 Asphalt Innovation Act of 2023, the Secretary shall estab-
18 lish a program of research, development, demonstration,
19 and commercial application of tools, technologies, and
20 methods for the production and use of low-emissions ce-
21 ment, concrete, asphalt binder, or asphalt mixture.

22 “(d) REQUIREMENTS.—In carrying out the program
23 established under subsection (c), the Secretary shall—

24 “(1) coordinate the activities carried out under
25 that program with, as applicable—

1 “(A) the activities of the Industrial Effi-
2 ciency and Decarbonization Office of the Office
3 of Energy Efficiency and Renewable Energy of
4 the Department, the Advanced Materials and
5 Manufacturing Technologies Office of the Office
6 of Energy Efficiency and Renewable Energy of
7 the Department, the Office of Fossil Energy
8 and Carbon Management of the Department,
9 the Office of Manufacturing and Energy Supply
10 Chains of the Department, the Building Tech-
11 nologies Office of the Department, the Office of
12 Clean Energy Demonstrations of the Depart-
13 ment, the Department of Transportation, the
14 Department of Defense, and the General Serv-
15 ices Administration, including activities carried
16 out pursuant to a collaborative research and de-
17 velopment partnership described in section 6(a)
18 of the American Energy Manufacturing Tech-
19 nical Corrections Act (42 U.S.C. 6351(a));

20 “(B) the activities carried out under sec-
21 tions 454, 455, and 456; and

22 “(C) activities carried out pursuant to the
23 national plan for smart manufacturing tech-
24 nology development and deployment developed

1 under section 6006 of the Energy Act of 2020
2 (42 U.S.C. 17115a); and

3 “(2) conduct research, development, and dem-
4 onstration of technologies for the production and use
5 of low-emissions cement, concrete, asphalt binder,
6 and asphalt mixtures that have the potential to in-
7 crease—

8 “(A) domestic production and use of low-
9 emissions cement, concrete, asphalt binder, and
10 asphalt mixtures; and

11 “(B) employment in fields relating to that
12 domestic production and use.

13 “(e) FOCUS AREAS.—In carrying out the program es-
14 tablished under subsection (c), the Secretary shall focus
15 on—

16 “(1) carbon capture technologies for cement or
17 asphalt binder production processes, which may in-
18 clude—

19 “(A) oxycombustion and chemical looping
20 technologies;

21 “(B) precombustion technologies;

22 “(C) postcombustion technologies; or

23 “(D) direct carbon dioxide separation tech-
24 nologies;

1 “(2) alternative materials, technologies, and
2 processes that—

3 “(A) produce fewer greenhouse gas and co-
4 pollutant emissions during production, use, or
5 end use of cement, concrete, asphalt binder, or
6 asphalt mixtures; and

7 “(B) with respect to quality, durability,
8 and resilience, provide products that are equiva-
9 lent to or better than commercially available
10 products;

11 “(3) medium- and high-temperature heat-gen-
12 eration technologies used for production of low-emis-
13 sions cement, asphalt binder, and asphalt mixtures,
14 which may include—

15 “(A) alternative fuels;

16 “(B) renewable heat-generation and stor-
17 age technology;

18 “(C) electrification of heating processes; or

19 “(D) other heat-generation and storage
20 sources;

21 “(4) technologies and practices that minimize
22 energy and natural resource consumption, which
23 may include—

24 “(A) designing products that enable reuse,
25 refurbishment, remanufacturing, or recycling;

1 “(B) minimizing waste, including waste
2 heat, from cement, concrete, asphalt binder,
3 and asphalt mixture production processes, in-
4 cluding through the reuse of waste as a re-
5 source in other industrial processes for mutual
6 benefit;

7 “(C) increasing resource efficiency; or

8 “(D) increasing the energy efficiency of ce-
9 ment, concrete, asphalt binder, or asphalt mix-
10 ture production processes;

11 “(5) technologies and approaches to reduce co-
12 pollutants from the production of cement, concrete,
13 asphalt binder, or asphalt mixtures, including—

14 “(A) sulfur dioxide;

15 “(B) nitrogen oxide;

16 “(C) particulate matter;

17 “(D) carbon monoxide emissions; and

18 “(E) a hazardous air pollutant (as defined
19 in section 112(a) of the Clean Air Act (42
20 U.S.C. 7412(a)));

21 “(6) high-performance computing to develop ad-
22 vanced materials and production processes that may
23 contribute to the focus areas described in para-
24 graphs (1) through (5), including—

1 “(A) modeling, simulation, and optimiza-
2 tion of the design of energy-efficient and sus-
3 tainable products; and

4 “(B) the use of digital prototyping and ad-
5 ditive production to enhance product design;
6 and

7 “(7) technologies that can be retrofitted at ce-
8 ment, concrete, asphalt binder, or asphalt mixture
9 plants that represent the most common facility types
10 in the United States and in other countries.

11 “(f) STRATEGIC PLAN.—

12 “(1) IN GENERAL.—Not later than 180 days
13 after the date of enactment of the Concrete and As-
14 phalt Innovation Act of 2023, the Secretary shall de-
15 velop and submit to the Committee on Energy and
16 Natural Resources of the Senate and the Committee
17 on Science, Space, and Technology of the House of
18 Representatives a 5-year strategic plan identifying
19 research, development, demonstration, and commer-
20 cial application goals for the program established
21 under subsection (c).

22 “(2) CONTENTS.—The strategic plan developed
23 under paragraph (1) shall—

1 “(A) establish technological and pro-
2 grammatic goals to achieve the requirements
3 described in subsection (d);

4 “(B) document existing activities of the
5 Department relating to low-emissions cement,
6 concrete, asphalt binder, or asphalt mixtures;

7 “(C) identify existing programs of the De-
8 partment that—

9 “(i) relate to the production of low-
10 emissions cement, concrete, asphalt binder,
11 or asphalt mixtures; and

12 “(ii) support, or could support, the re-
13 search, development, demonstration, and
14 commercial application activities described
15 in this section, including any demonstra-
16 tion projects carried out under subsection
17 (g);

18 “(D) to avoid duplication of efforts, incor-
19 porate findings from—

20 “(i) the document of the Department
21 entitled ‘Industrial Decarbonization Road-
22 map’, numbered DOE/EE–2635, and
23 dated September 2022; and

24 “(ii) the document of the Department
25 entitled ‘Pathway to Commercial Liftoff:

1 Low-Carbon Cement’, and dated Sep-
2 tember 2023;

3 “(E) identify any new programs needed to
4 fully carry out this section;

5 “(F) identify resource needs of the Depart-
6 ment relating to the research, development, and
7 demonstration of technologies for the produc-
8 tion and use of low-emissions cement, concrete,
9 asphalt binder, and asphalt mixtures;

10 “(G) identify research areas that the pri-
11 vate sector is unable or unwilling to undertake
12 due to the cost of, or risks associated with, the
13 research; and

14 “(H) identify and engage in opportunities
15 for the Department, National Laboratories, and
16 relevant Centers to participate in international
17 standards setting to enhance United States
18 manufacturing competitiveness.

19 “(3) UPDATES TO PLAN.—Not less frequently
20 than once every 2 years, the Secretary shall submit
21 to the Committee on Energy and Natural Resources
22 of the Senate and the Committee on Science, Space,
23 and Technology of the House of Representatives an
24 updated version of the strategic plan developed
25 under paragraph (1).

1 “(g) DEMONSTRATION INITIATIVE.—

2 “(1) ESTABLISHMENT.—Not later than 180
3 days after the date of enactment of the Concrete
4 and Asphalt Innovation Act of 2023, the Secretary,
5 in consultation with industry partners, institutions
6 of higher education, environmental nongovernmental
7 organizations, the Secretary of Transportation, the
8 Administrator of General Services, National Labora-
9 tories, and relevant Centers, shall establish, as part
10 of the program established under subsection (c), an
11 initiative (referred to in this subsection as the ‘ini-
12 tiative’) for the demonstration of 1 or more methods
13 for the production of low-emissions cement, concrete,
14 asphalt binder, and asphalt mixtures that use ei-
15 ther—

16 “(A) a single technology; or

17 “(B) a combination of multiple tech-
18 nologies.

19 “(2) SELECTION OF ELIGIBLE ENTITIES.—

20 “(A) IN GENERAL.—The Secretary shall
21 select eligible entities to carry out demonstra-
22 tion projects under the initiative.

23 “(B) REQUIREMENTS.—In selecting eligi-
24 ble entities to carry out demonstration projects

1 under subparagraph (A), the Secretary, to the
2 maximum extent practicable, shall—

3 “(i) ensure—

4 “(I) regional diversity among the
5 eligible entities selected, including by
6 selecting eligible entities located in
7 rural areas (as defined in section
8 343(a) of the Consolidated Farm and
9 Rural Development Act (7 U.S.C.
10 1991(a)));

11 “(II) technological diversity
12 among the eligible entities selected;
13 and

14 “(III) that the projects carried
15 out by those eligible entities under the
16 initiative expand on the existing tech-
17 nology demonstration programs of the
18 Department; and

19 “(ii) prioritize the selection of eligible
20 entities—

21 “(I) based on the extent to which
22 the projects carried out by the eligible
23 entities contribute to emissions reduc-
24 tions; and

1 “(II) that will carry out projects
2 that leverage matching funds from
3 non-Federal sources.

4 “(3) REPORTS.—

5 “(A) IN GENERAL.—Not less frequently
6 than once every 2 years for the duration of the
7 initiative, the Secretary shall submit to the
8 Committee on Energy and Natural Resources of
9 the Senate and the Committee on Science,
10 Space, and Technology of the House of Rep-
11 resentatives a report that, for the period cov-
12 ered by the report—

13 “(i) describes the activities carried out
14 by the Secretary in support of the initia-
15 tive;

16 “(ii) provides a review of the cost-
17 competitiveness and other value streams,
18 the technology readiness level, and the
19 adoption readiness level of each technology
20 demonstrated under the initiative;

21 “(iii) describes the status and out-
22 comes of any projects carried out under
23 the initiative; and

24 “(iv) recommends appropriate applica-
25 tion of cement, concrete, asphalt binder,

1 and asphalt mixture materials, in consulta-
2 tion with engineering and design experts
3 with demonstrated records of utilization of
4 novel materials in construction.

5 “(B) FINAL REPORT.—If the initiative is
6 terminated, the Secretary shall submit to the
7 Committee on Energy and Natural Resources of
8 the Senate and the Committee on Science,
9 Space, and Technology of the House of Rep-
10 resentatives a report assessing the success of,
11 and any education provided by, the demonstra-
12 tion projects carried out by any recipients of fi-
13 nancial assistance under the initiative.

14 “(4) AUTHORIZATION OF APPROPRIATIONS.—
15 There is authorized to be appropriated to the Sec-
16 retary to carry out the initiative \$200,000,000 for
17 the period of fiscal years 2025 through 2029.

18 “(5) TERMINATION.—The Secretary may termi-
19 nate the initiative if the Secretary determines that
20 sufficient low-emissions cement, concrete, asphalt
21 binder, and asphalt mixtures are commercially avail-
22 able domestically at a price comparable to the price
23 of cement, concrete, asphalt binder, and asphalt mix-
24 tures produced through traditional methods of pro-
25 duction.

1 “(h) TECHNICAL ASSISTANCE PROGRAM.—

2 “(1) IN GENERAL.—The Secretary, in consulta-
3 tion with the Secretary of Transportation, the Sec-
4 retary of Commerce (acting through the Director of
5 the National Institute of Standards and Tech-
6 nology), the Administrator of General Services, and
7 the Administrator of the Environmental Protection
8 Agency, shall provide technical assistance to eligible
9 entities to carry out an activity described in para-
10 graph (2) to promote the commercial application of
11 technologies for the production and use of low-emis-
12 sions cement, concrete, asphalt binder, or asphalt
13 mixtures.

14 “(2) ACTIVITIES DESCRIBED.—An activity re-
15 ferred to in paragraph (1) is—

16 “(A) the updating of local codes, specifica-
17 tions, and standards to engineering perform-
18 ance standards;

19 “(B) a lifecycle assessment of the final
20 product;

21 “(C) an environmental product declaration
22 (as defined in section 2 of the Concrete and As-
23 phalt Innovation Act of 2023);

24 “(D) a techno-economic assessment;

1 “(E) an environmental permitting or other
2 regulatory process;

3 “(F) an evaluation or testing activity; or

4 “(G) any other activity that promotes the
5 commercial application of technologies devel-
6 oped through the program established under
7 subsection (c).

8 “(3) APPLICATIONS.—The Secretary shall seek
9 applications for technical assistance under this sub-
10 section—

11 “(A) on a competitive basis; and

12 “(B) on a periodic basis, but not less fre-
13 quently than once every 12 months.

14 “(4) REGIONAL CENTERS.—The Secretary may
15 designate or establish 1 or more regional centers to
16 provide technical assistance to eligible entities to
17 carry out the activity described in paragraph (2)(A).

18 “(i) DETERMINATION OF EMISSION LEVELS.—

19 “(1) BASELINE EMBODIED GREENHOUSE GAS
20 EMISSIONS.—The Secretary shall—

21 “(A) determine current baseline embodied
22 greenhouse gas emissions of cement, concrete,
23 asphalt binder, and asphalt mixtures, including
24 a detailed methodology for determining each of
25 those emissions; and

“(B) within 1 year of the date of enactment of the Concrete and Asphalt Innovation Act of 2023, determine a timeline for regional-level emissions reductions, to the maximum extent practicable, taking into consideration—

“(i) potential for greenhouse gas emissions reductions;

“(ii) feedstock availability;

“(iii) equipment and skilled workforce availability;

“(iv) technology and market readiness levels of low-emissions cement, concrete, asphalt binder, and asphalt mixture technologies;

“(v) the regulatory and specification landscape; and

“(vi) any other factor, as determined by the Secretary.

“(2) CONFORMING LOW-EMISSIONS CEMENT, CONCRETE, ASPHALT BINDER, OR ASPHALT MIXTURES FOR DEPARTMENT OF TRANSPORTATION ADVANCE PURCHASE COMMITMENTS.—The Secretary shall establish or update, as applicable, a reasonable but ambitious threshold, expressed as a percentage-based delta relative to the current baseline embodied

1 greenhouse gas emissions, for purposes of defining
2 conforming low-emissions cement, concrete, asphalt
3 binder, or asphalt mixtures under section 6(b)(2) of
4 the Concrete and Asphalt Innovation Act of 2023,
5 which shall be reassessed not less frequently than
6 once every 2 years.

7 “(3) CONSULTATION.—In carrying out this sub-
8 section, the Secretary shall consult with the fol-
9 lowing stakeholders, who shall reflect regional diver-
10 sity to the maximum extent practicable:

11 “(A) Entities in the cement, concrete, as-
12 phalt binder, and asphalt mixture sectors, in-
13 cluding—

14 “(i) ready-mix or site-mixed concrete
15 producers;

16 “(ii) precast concrete producers;

17 “(iii) portland cement (as defined in
18 section 2 of the Concrete and Asphalt In-
19 novation Act of 2023) and other cement
20 producers;

21 “(iv) aggregate producers;

22 “(v) asphalt binder producers;

23 “(vi) asphalt mixture producers;

1 “(vii) producers of emerging cement,
 2 concrete, asphalt binder, or asphalt mix-
 3 ture solutions; and

4 “(viii) distributors and users of ce-
 5 ment, concrete, asphalt binder, or asphalt
 6 mixture production.

7 “(B) Contracting companies with at least
 8 1 Federal Government contract awarded in the
 9 preceding 5 years.

10 “(C) Contracting companies with at least 1
 11 private sector contract awarded in the pre-
 12 ceding 5 years.

13 “(D) Experts, including from nongovern-
 14 mental organizations, on the environmental im-
 15 pact of cement, concrete, asphalt binder, and
 16 asphalt mixture production in architectural and
 17 nonarchitectural applications, with expertise
 18 in—

19 “(i) developing codes, specifications,
 20 and standards for cement, concrete, as-
 21 phalt binder, and asphalt mixtures;

22 “(ii) conducting performance tests on
 23 cement, concrete, asphalt binder, and as-
 24 phalt mixtures;

1 “(iii) working with the National Insti-
2 tute of Building Sciences;

3 “(iv) working for State departments
4 of transportation from different regions of
5 the United States; and

6 “(v) developing benchmarks for em-
7 bodied greenhouse gas emissions.

8 “(E) Stakeholders in any other relevant in-
9 dustries, as determined by the Secretary.

10 “(j) MANUFACTURING USA INSTITUTES.—In car-
11 rying out this section, the Secretary shall—

12 “(1) support, including through financial assist-
13 ance provided under subsection (e) of section 34 of
14 the National Institute of Standards and Technology
15 Act (15 U.S.C. 278s), Manufacturing USA insti-
16 tutes established or supported under section 4(d) of
17 the Concrete and Asphalt Innovation Act of 2023;

18 “(2) leverage the resources of those Manufac-
19 turing USA institutes; and

20 “(3) integrate the activities carried out under
21 the program established under subsection (c) with
22 the activities of those Manufacturing USA institutes.

23 “(k) OTHER FEDERAL AGENCIES.—In carrying out
24 this section, the Secretary shall coordinate with relevant
25 officials at other Federal agencies that are carrying out

1 research and development initiatives to increase industrial
 2 competitiveness and achieve significant greenhouse gas
 3 emissions reductions in the production of low-emissions ce-
 4 ment, concrete, asphalt binder, or asphalt mixtures, in-
 5 cluding relevant officials at the Department of Defense,
 6 the Department of Transportation, the General Services
 7 Administration, the Environmental Protection Agency,
 8 and the National Institute of Standards and Technology.”.

9 (b) CLERICAL AMENDMENT.—The table of contents
 10 in section 1(b) of the Energy Independence and Security
 11 Act of 2007 (Public Law 110–140; 121 Stat. 1494; 134
 12 Stat. 2556; 134 Stat. 2559; 134 Stat. 2560; 135 Stat.
 13 1067) is amended by adding at the end of the items relat-
 14 ing to subtitle D of title IV the following:

“Sec. 458. Low-emissions cement, concrete, asphalt binder, and asphalt mixture
 production research program.”.

15 **SEC. 4. LOW-EMISSIONS CONCRETE AND LOW-EMISSIONS**
 16 **ASPHALT MANUFACTURING USA INSTITUTES.**

17 (a) DEFINITIONS.—In this section:

18 (1) ELIGIBLE ENTITY.—The term “eligible enti-
 19 ty” has the meaning given the term in section
 20 458(b) of the Energy Independence and Security Act
 21 of 2007 (as added by section 3).

22 (2) MANUFACTURING USA INSTITUTE.—The
 23 term “Manufacturing USA institute” has the mean-
 24 ing given the term in section 34(d) of the National

1 Institute of Standards and Technology Act (15
2 U.S.C. 278s(d)).

3 (3) SECRETARY.—The term “Secretary” means
4 the Secretary of Commerce, acting through the Di-
5 rector of the National Institute of Standards and
6 Technology.

7 (b) PURPOSE.—The purpose of this section is to sup-
8 port—

9 (1) the development of standardized testing and
10 technical validation of low-emissions cement, con-
11 crete, asphalt binder, and asphalt mixtures; and

12 (2) the expansion, reskilling, and upskilling of
13 the manufacturing workforce to increase employ-
14 ment in fields relating to the domestic production
15 and use of low-emissions cement, concrete, asphalt
16 binder, and asphalt mixtures.

17 (c) CONSIDERATIONS.—In carrying out this section,
18 the Secretary shall consider strategies for—

19 (1) improving the durability and performance of
20 cement, concrete, asphalt binder, and asphalt mix-
21 tures, including low-emissions cement, concrete, as-
22 phalt binder, and asphalt mixtures;

23 (2) reducing the cost of low-emissions cement,
24 concrete, asphalt binder, and asphalt mixtures;

1 (3) supporting continuous innovation and emis-
 2 sions reductions in the production of low-emissions
 3 cement, concrete, asphalt binder, and asphalt mix-
 4 tures;

5 (4) increasing employment in fields relating to
 6 the domestic production and use of low-emissions ce-
 7 ment, concrete, asphalt binder, and asphalt mix-
 8 tures; and

9 (5) providing information to satisfy the respon-
 10 sibilities of the Task Force.

11 (d) AUTHORITY TO ESTABLISH OR SUPPORT THE
 12 ESTABLISHMENT OF MANUFACTURING USA INSTITUTES
 13 FOCUSED ON LOW-EMISSIONS CEMENT AND CONCRETE
 14 AND LOW-EMISSIONS ASPHALT BINDER AND MIX-
 15 TURES.—

16 (1) IN GENERAL.—Subject to subsection (g),
 17 the Secretary may, in consultation with the Sec-
 18 retary of Energy, the Secretary of Transportation,
 19 the Secretary of Defense, and the Administrator of
 20 the General Services Administration, establish, or
 21 award financial assistance under section 34(e)(1) of
 22 the National Institute of Standards and Technology
 23 Act (15 U.S.C. 278s(e)(1)) to plan, establish, or
 24 support, 2 Manufacturing USA institutes, 1 for low-

emissions cement and concrete and 1 for low-emissions asphalt binder and mixtures that—

(A) establish advanced testing capabilities for properties of low-emissions cement or concrete and low-emissions binder or mixtures, respectively, produced by an eligible entity;

(B) provide centralized, publicly available data on the properties of low-emissions cement or concrete and low-emissions asphalt binder or mixtures, respectively;

(C) support the development and implementation of education, training, and workforce recruitment courses, materials, and programs addressing workforce needs in fields related to the domestic production and use of low-emissions cement or concrete, and low-emissions asphalt binder or mixtures, respectively, through training and education programs at all appropriate education levels; and

(D) provide collected information to the Task Force.

(2) COORDINATION.—In addition to subparagraphs (A) through (D) of paragraph (1), the Secretary shall require the Manufacturing USA institutes established, planned, or supported under such

paragraph to coordinate with the research program established under section 458(c) of the Energy Independence and Security Act of 2007, as added by section 3, to carry out activities focused on researching, developing, demonstrating, and deploying low-emissions cement, concrete, asphalt binder, and asphalt mixtures.

(3) SUPPORT AND ASSISTANCE FOR STATES.—

(A) IN GENERAL.—The Manufacturing USA institutes established, planned, or supported under paragraph (1) shall, pursuant to a request from a State agency for testing support, guidance, or resources, provide the State agency with such testing support, guidance, or resources in the form of technical assistance or a grant.

(B) CONDITION.—The Secretary shall require, as a condition on the receipt of a grant under subparagraph (A), that the recipient of the grant make publicly available all data collected by the recipient using amounts from the grant.

(e) SELECTION OF CEMENT, CONCRETE, ASPHALT BINDER, OR ASPHALT MIXTURES FOR TESTING.—In selecting cement, concrete, asphalt binder, or asphalt mix-

1 tures from eligible entities for testing by the Manufac-
 2 turing USA institutes established, planned, or supported
 3 under subsection (d)(1), the Manufacturing USA insti-
 4 tutes shall—

5 (1) seek to achieve regional diversity in the ce-
 6 ment, concrete, asphalt binder, or asphalt mixtures
 7 from eligible entities selected for testing;

8 (2) seek to achieve technological diversity in the
 9 cement, concrete, asphalt binder, or asphalt mixtures
 10 from eligible entities selected for testing;

11 (3) prioritize cement, concrete, asphalt binder,
 12 or asphalt mixtures from eligible entities that lever-
 13 age matching funds from non-Federal sources; and

14 (4) prioritize projects that would have the
 15 greatest reduction in emissions on a lifecycle basis.

16 (f) ALTERNATIVES.—The Secretary may carry out
 17 this section by—

18 (1) leveraging resources of relevant existing
 19 Manufacturing USA institutes;

20 (2) integrating program activities into a rel-
 21 evant existing Manufacturing USA institute; or

22 (3) establishing new Manufacturing USA insti-
 23 tutes in accordance with subsection (d).

1 (g) FUNDING.—The Secretary shall carry out this
 2 section using amounts otherwise available to the Sec-
 3 retary.

4 **SEC. 5. FEDERAL HIGHWAY ADMINISTRATION.**

5 (a) PERFORMANCE-BASED LOW-EMISSIONS TRANS-
 6 PORTATION MATERIALS GRANTS.—

7 (1) PURPOSE.—The purpose of this subsection
 8 is to encourage States to improve State-level cement,
 9 concrete, asphalt binder, and asphalt mixture speci-
 10 fications and standards to facilitate the purchase of
 11 low-emissions cement, concrete, asphalt binder, or
 12 asphalt mixtures.

13 (2) ESTABLISHMENT.—The Administrator of
 14 the Federal Highway Administration (referred to in
 15 this section as the “Administrator”) shall provide to
 16 States—

17 (A) reimbursement for the additional cost
 18 of using low-emissions cement, concrete, asphalt
 19 binder, and asphalt mixtures used in highway
 20 projects of the State;

21 (B) incentives for the acquisition of low-
 22 emissions cement, concrete, asphalt binder, and
 23 asphalt mixtures for use in highway projects of
 24 the State; and

1 (C) technical assistance to update the spec-
2 ifications and standards of the State to be per-
3 formance-based specifications and standards.

4 (3) ELIGIBILITY.—To be eligible to receive re-
5 imbursement or incentives under this subsection, a
6 State shall have in effect, as appropriate, special
7 provisions, specifications, or standards, such as engi-
8 neering performance standards, that facilitate the
9 purchase of low-emissions cement, concrete, asphalt
10 binder, and asphalt mixtures.

11 (4) COORDINATION.—In carrying out this sub-
12 section, the Administrator shall leverage the Every
13 Day Counts Initiative of the Department of Trans-
14 portation to promote the commercialization of low-
15 emissions cement, concrete, asphalt binder, and as-
16 phalt mixtures.

17 (5) AUTHORIZATION OF APPROPRIATIONS.—
18 There is authorized to be appropriated to the Sec-
19 retary to carry out this subsection \$15,000,000 for
20 the period of fiscal years 2025 through 2027.

21 (b) TIMELY APPROVAL OF CEMENT, CONCRETE, AS-
22 PHALT BINDER, OR ASPHALT MIXTURES.—

23 (1) IN GENERAL.—Not later than 180 days
24 after the date of enactment of this Act, the Adminis-
25 trator shall establish a procedure under which States

1 may submit new low-emissions cement, concrete, as-
2 phalt binder, or asphalt mixtures for timely approval
3 for use in highways projects of the State.

4 (2) SUBMISSION.—To be considered for ap-
5 proval under the procedure established under para-
6 graph (1), a State shall submit an application to the
7 Administrator at such time, in such manner, and
8 containing such information as the Administrator
9 determines to be necessary.

10 (3) DECISION DEADLINE.—Not later than 180
11 days after the date on which the Administrator re-
12 ceives an application under paragraph (2), the Ad-
13 ministrator shall—

14 (A) approve the application; or

15 (B) deny the application.

16 (4) APPROVAL.—Low-emissions cement, con-
17 crete, asphalt binder, or asphalt mixtures approved
18 under paragraph (3)(A) may be used in any highway
19 project of the State.

20 (5) WRITTEN REASONS FOR DENIAL.—If the
21 Administrator denies an application under para-
22 graph (3)(B), the Administrator shall provide the
23 State a written explanation for the denial.

24 **SEC. 6. ADVANCE PURCHASE COMMITMENT AUTHORITY.**

25 (a) PURPOSE.—The purposes of this section are—

1 (1) to authorize the Secretary to directly pur-
 2 chase or contractually guarantee the direct purchase
 3 of conforming low-emissions cement, concrete, as-
 4 phalt binder, or asphalt mixtures; and

5 (2) to encourage continuous innovation and
 6 long-term emissions reductions in the production of
 7 concrete, cement, asphalt binder, and asphalt mix-
 8 tures.

9 (b) DEFINITIONS.—In this section:

10 (1) ADVANCE PURCHASE COMMITMENT.—The
 11 term “advance purchase commitment” means a
 12 binding commitment from the Department of Trans-
 13 portation to purchase, 3 or more years in the future,
 14 from a private entity, a specified minimum quantity
 15 of conforming low-emissions cement, concrete, as-
 16 phalt binder, or asphalt mixtures at a specified min-
 17 imum price with the objective of establishing market
 18 demand for the conforming low-emissions cement,
 19 concrete, asphalt binder, or asphalt mixtures.

20 (2) CONFORMING LOW-EMISSIONS CEMENT,
 21 CONCRETE, ASPHALT BINDER, OR ASPHALT MIX-
 22 TURE.—The term “conforming low-emissions ce-
 23 ment, concrete, asphalt binder, or asphalt mixture”
 24 means a low-emissions cement, concrete, asphalt
 25 binder, or asphalt mixture that—

1 (A) meets or exceeds the threshold estab-
 2 lished by the Secretary of Energy under section
 3 458(i)(2) of the Energy Independence and Se-
 4 curity Act of 2007 that is in effect on the date
 5 on which the applicable advance purchase com-
 6 mitment is awarded under the program; and

7 (B) meets all applicable technical specifica-
 8 tions established by the Secretary.

9 (3) PROGRAM.—The term “program” means
 10 the program established under subsection (c).

11 (4) SECRETARY.—The term “Secretary” means
 12 the Secretary of Transportation.

13 (c) ESTABLISHMENT OF PROGRAM.—Not later than
 14 180 days after the date of enactment of this Act, the Sec-
 15 retary shall establish a program for awarding, on a com-
 16 petitive basis, advance purchase commitments.

17 (d) REQUIREMENT.—An advance purchase commit-
 18 ment shall be awarded under the program only after—

19 (1) a private entity submits to the Secretary—

20 (A) a statement describing the quantity
 21 and cost of the conforming low-emissions ce-
 22 ment, concrete, asphalt binder, or asphalt mix-
 23 ture for which the advance purchase commit-
 24 ment is sought; and

1 (B)(i) an environmental product declara-
2 tion;

3 (ii) in cases in which a private entity does
4 not have sufficient production to generate an
5 environmental product declaration, a lifecycle
6 assessment consistent with ISO 14044 of the
7 International Organization for Standardization;
8 or

9 (iii) a preliminary environmental product
10 declaration, which shall be verified within 1
11 year of fulfillment of delivery of materials pur-
12 suant to the advance purchase commitment;
13 and

14 (2) the Secretary, based on those submissions—

15 (A) confirms that the embodied greenhouse
16 gas emissions of the conforming low-emissions
17 cement, concrete, asphalt binder, or asphalt
18 mixture meet or exceed the threshold described
19 in subsection (b)(2)(A); and

20 (B) based on the submission under para-
21 graph (1)(B) otherwise verifies that the low-
22 emissions cement, concrete, asphalt binder, or
23 asphalt mixture is a conforming low-emissions
24 cement, concrete, asphalt binder, or asphalt
25 mixture.

1 (e) PREFERENCE CRITERIA.—In carrying out the
2 program, the Secretary shall prioritize the award of ad-
3 vance purchase commitments based on the following fac-
4 tors:

5 (1) The degree of greenhouse gas emissions re-
6 duced during or in connection with the production of
7 the applicable conforming low-emissions cement, con-
8 crete, asphalt binder, or asphalt mixture.

9 (2) The anticipated suitability of the con-
10 forming low-emissions cement, concrete, asphalt
11 binder, or asphalt mixture for its intended use.

12 (3) The potential of the advance purchase com-
13 mitment to increase the availability of, or financing
14 for, conforming low-emissions cement, concrete, as-
15 phalt binder, or asphalt mixtures.

16 (4) The utilization or mineralization of carbon
17 dioxide in the conforming low-emissions cement, con-
18 crete, or asphalt mixture, subject to the condition
19 that the utilization or mineralization of the carbon
20 dioxide does not lead to positive net carbon dioxide
21 emissions.

22 (f) ASSIGNABILITY.—A contract entered into or ma-
23 terial purchased pursuant to this section may be assigned
24 to a State department of transportation or a local trans-
25 portation authority at the discretion of the Secretary.

1 (g) CLARIFICATION.—Any update or revision to the
 2 threshold established by the Secretary of Energy under
 3 section 458(i)(2) of the Energy Independence and Secu-
 4 rity Act of 2007 shall not affect or otherwise apply to any
 5 advance purchase commitment awarded under the pro-
 6 gram before the date of that update or revision.

7 (h) FUNDING.—The Secretary shall carry out this
 8 section using amounts otherwise available to the Sec-
 9 retary.

10 **SEC. 7. INTERAGENCY TASK FORCE FOR CONCRETE AND**
 11 **ASPHALT INNOVATION.**

12 (a) IN GENERAL.—The Secretary, in coordination
 13 with the Secretary of Transportation, the Administrator
 14 of General Services, the Secretary of Defense, the Director
 15 of the National Institute of Standards and Technology,
 16 and the Administrator of the Environmental Protection
 17 Agency, shall establish a task force, to be known as the
 18 “Interagency Task Force for Concrete and Asphalt Inno-
 19 vation”.

20 (b) OBJECTIVES.—In carrying out the duties of the
 21 Task Force, the Task Force shall consider strategies for—

22 (1) improving the durability and performance of
 23 low-emissions cement, concrete, asphalt binder, or
 24 asphalt mixtures;

1 (2) reducing the cost of low-emissions cement,
2 concrete, asphalt binder, or asphalt mixtures;

3 (3) supporting continuous innovation and emis-
4 sions reductions in the production of low-emissions
5 cement, concrete, asphalt binder, or asphalt mix-
6 tures;

7 (4) increasing employment in fields related to
8 the domestic production of low-emissions cement,
9 concrete, asphalt binder, or asphalt mixtures; and

10 (5) ensuring a trained workforce in fields re-
11 lated to the domestic production and use of low-
12 emissions cement, concrete, asphalt binder, or as-
13 phalt mixtures.

14 (c) COMPOSITION.—The Task Force shall be com-
15 posed of 2 members from each of—

16 (1) the Department of Energy;

17 (2) the Department of Transportation;

18 (3) the General Services Administration;

19 (4) the Department of Defense;

20 (5) the National Institute of Standards and
21 Technology; and

22 (6) the Environmental Protection Agency.

23 (d) CONSULTATION.—In carrying out the duties of
24 the Task Force, the Secretary shall consult with the fol-

1 lowing stakeholders, who shall reflect regional diversity to
 2 the maximum extent practicable:

3 (1) Entities in the cement, concrete, asphalt
 4 binder, and asphalt mixture sectors, including—

5 (A) ready-mix or site-mixed concrete pro-
 6 ducers;

7 (B) precast concrete producers;

8 (C) portland cement and other cement pro-
 9 ducers;

10 (D) aggregate producers;

11 (E) asphalt binder producers;

12 (F) asphalt mixture producers;

13 (G) producers of emerging cement, con-
 14 crete, asphalt binder, or asphalt mixture solu-
 15 tions; and

16 (H) distributors and users of cement, con-
 17 crete, asphalt binder, or asphalt mixture pro-
 18 duction.

19 (2) Contracting companies with at least 1 Fed-
 20 eral Government contract awarded in the preceding
 21 5 years.

22 (3) Contracting companies with at least 1 pri-
 23 vate sector contract awarded in the preceding 5
 24 years.

1 (4) Experts, including from nongovernmental
 2 organizations, on the environmental impact of ce-
 3 ment, concrete, asphalt binder, and asphalt mixture
 4 production in architectural and nonarchitectural ap-
 5 plications, with expertise in—

6 (A) developing codes, specifications, and
 7 standards for cement, concrete, asphalt binder,
 8 and asphalt mixtures;

9 (B) conducting performance tests on ce-
 10 ment, concrete, asphalt binder, and asphalt
 11 mixtures;

12 (C) working with the National Institute of
 13 Building Sciences;

14 (D) working for State departments of
 15 transportation from different regions of the
 16 United States; and

17 (E) developing benchmarks for embodied
 18 greenhouse gas emissions.

19 (5) Stakeholders in any other relevant indus-
 20 tries, as determined by the Secretary.

21 (e) RESPONSIBILITIES.—The Task Force shall—

22 (1) provide recommendations to the Secretary
 23 on—

24 (A) the use of engineering performance
 25 standards for low-emissions cement, concrete,

1 asphalt binder, and asphalt mixtures, including
2 taking into account lessons learned from the re-
3 imbursement and incentives provided under sec-
4 tion 5(a)(2);

5 (B) creating guidelines and best practices
6 for the testing and evaluation of low-emissions
7 cement, concrete, asphalt binder, and asphalt
8 mixtures, including taking into account lessons
9 learned from the Manufacturing USA institutes
10 planned, established, or supported under section
11 4(d);

12 (C) improving the product category rules
13 governing the creation of relevant environ-
14 mental product declarations for low-emissions
15 cement, concrete, asphalt binder, and asphalt
16 mixture, including taking into account lessons
17 learned from the technical assistance program
18 established under section 458(h) of the Energy
19 Independence and Security Act of 2007; and

20 (D) incentives that would encourage the
21 use of low-emissions cement, concrete, asphalt
22 binder, and asphalt mixtures, including taking
23 into account lessons learned from the advance
24 purchase commitment program established
25 under section 6(c);

1 (2) coordinate meetings and facilitate discus-
2 sions through forums such as roundtables, work-
3 shops, or conferences to inform the recommenda-
4 tions provided under paragraph (1); and

5 (3) host briefings and provide updates to—

6 (A) the Committee on Energy and Natural
7 Resources of the Senate; and

8 (B) the Committee on Science, Space, and
9 Technology of the House of Representatives.

10 (f) REPORT.—Once every 2 years, the Secretary, in
11 consultation with the Task Force, shall submit to Con-
12 gress a report that describes—

13 (1)(A) each of the recommendations made
14 under subsection (e)(1); and

15 (B) the response of the Secretary to each of
16 those recommendations, including how best to imple-
17 ment each recommendation;

18 (2) the determinations made by the Secretary
19 under section 458(i)(1) of the Energy Independence
20 and Security Act of 2007;

21 (3) the threshold established under section
22 458(i)(2) of the Energy Independence and Security
23 Act of 2007, including a justification for that
24 threshold;

1 (4) changes to State and local codes and speci-
2 fications facilitated by the Task Force during the
3 period covered by the report; and

4 (5) meetings with cement, concrete, asphalt
5 binder, and asphalt mixture producers, contractors,
6 engineers, academics, State and local government of-
7 ficials, or any other relevant stakeholders coordi-
8 nated by the Task Force during the period covered
9 by the report.

10 (g) TERMINATION.—The Secretary may terminate
11 the Task Force if the Secretary determines that sufficient
12 low-emissions cement, concrete, asphalt binder, and as-
13 phalt mixtures are commercially available domestically at
14 a price comparable to the price of cement, concrete, as-
15 phalt binder, and asphalt mixtures produced through tra-
16 ditional methods of production.

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