

119TH CONGRESS
1ST SESSION

H. R. 1534

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

FEBRUARY 24, 2025

Mr. MILLER of Ohio (for himself and Mrs. FOUSHEE) introduced the following bill; which was referred to the Committee on Science, Space, and Technology

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.

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

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “Innovative Mitigation
5 Partnerships for Asphalt and Concrete Technologies Act”
6 or the “IMPACT Act”.

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

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

7 **“SEC. 40523. ADVANCED CEMENT, CONCRETE, AND AS-**
8 **PHALT PRODUCTION RESEARCH PROGRAM.**

9 “(a) DEFINITIONS.—In this section:

10 “(1) ADVANCED PRODUCTION.—The term ‘ad-
11 vanced production’ means production of cement,
12 concrete, or asphalt with one or more of the fol-
13 lowing improvements with respect to the production
14 of commercially available cement, concrete, or as-
15 phalt:

16 “(A) Improved cost-effectiveness.

17 “(B) Improved quality, durability, engi-
18 neering performance, and resilience.

19 “(C) Improved efficiency of resource con-
20 sumption and material demand.

21 “(2) ALTERNATIVE FUELS.—The term ‘alter-
22 native fuels’ means any solid, liquid, or gaseous ma-
23 terials, or a combination thereof, used to replace or
24 supplement any portion of fuels used in combustion
25 or pyrolysis for low-emissions cement, concrete, or
26 asphalt.

1 “(3) **COMMERCIALLY AVAILABLE.**—The term
2 ‘commercially available’, with respect to cement, con-
3 crete, and asphalt, means that the cement, concrete,
4 or asphalt is—

5 “(A) readily and widely available for pur-
6 chase in the United States; and

7 “(B) produced using a production method
8 of cement, concrete, or asphalt products, as ap-
9 plicable, that is widely in use.

10 “(4) **ELIGIBLE ENTITY.**—The term ‘eligible en-
11 tity’ means any of the following:

12 “(A) An institution of higher education.

13 “(B) An appropriate State or Federal enti-
14 ty, including a federally funded research and
15 development center of the Department.

16 “(C) A nonprofit research institution.

17 “(D) A private entity.

18 “(E) Any other relevant entity the Sec-
19 retary determines appropriate.

20 “(F) A partnership or consortium of two
21 or more entities described in subparagraphs (A)
22 through (E).

23 “(5) **ENGINEERING PERFORMANCE-BASED**
24 **STANDARD.**—The term ‘engineering performance-
25 based standard’ means an existing engineering

1 standard with respect to which the requirements ap-
2 plicable to such standard are stated in terms of re-
3 quired results, with criteria for verifying compliance
4 rather than specific composition, design, or proce-
5 dure.

6 “(6) INSTITUTION OF HIGHER EDUCATION.—
7 The term ‘institution of higher education’ has the
8 meaning given such term in section 101 of the High-
9 er Education Act of 1965 (20 U.S.C. 1001).

10 “(7) LOW-EMISSIONS CEMENT, CONCRETE, AND
11 ASPHALT.—The term ‘low-emissions cement, con-
12 crete, and asphalt’ means cement, concrete, asphalt
13 binder, or asphalt mixture that reduces, to the max-
14 imum extent practicable, greenhouse gas or directly-
15 related copollutant emissions to levels below commer-
16 cially available cement, concrete, or asphalt.

17 “(8) RURAL AREA.—The term ‘rural area’ has
18 the meaning given such term in section 343(a) of
19 the Consolidated Farm and Rural Development Act
20 (7 U.S.C. 1991(a)).

21 “(b) ESTABLISHMENT.—Not later than 180 days
22 after the date of the enactment of this section, the Sec-
23 retary shall establish a program of research, development,
24 demonstration, and commercial application of advanced
25 tools, technologies, and methods for advanced production

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

3 “(1) Increase the technological and economic
4 competitiveness of industry and production in the
5 United States.

6 “(2) Expand and increase the stability of sup-
7 ply chains through enhanced domestic production,
8 nearshoring, and cooperation with allies.

9 “(3) Achieve measurable greenhouse gas or di-
10 rectly related copollutant emissions reductions in the
11 production processes for cement, concrete, and as-
12 phalt products.

13 “(4) Create quality domestic jobs.

14 “(c) REQUIREMENTS.—In carrying out the program
15 under subsection (b), the Secretary shall carry out the fol-
16 lowing:

17 “(1) Coordinate with the programs and activi-
18 ties authorized under title VI of division Z of the
19 Consolidated Appropriations Act, 2021 (relating to
20 industrial and manufacturing technologies) and the
21 amendments made by such title.

22 “(2) Coordinate across all relevant program of-
23 fices of the Department, including the Office of
24 Science, the Advanced Research Projects Agency-
25 Energy, the Office of Clean Energy Demonstrations,

1 the Office of Energy Efficiency and Renewable En-
2 ergy, the Office of Fossil Energy, the Office of In-
3 dustrial Efficiency and Decarbonization, the Office
4 of Manufacturing and Energy Supply Chains, and
5 the Office of Nuclear Energy.

6 “(3) Leverage, to the extent practicable, the re-
7 search infrastructure of the Department, including
8 scientific computing user facilities, x-ray light
9 sources, neutron scattering facilities, and nanoscale
10 science research centers.

11 “(4) Conduct research, development, dem-
12 onstration, and commercial application of the ad-
13 vanced production of low-emissions cement, concrete,
14 and asphalt that have the potential to increase do-
15 mestic production and employment in both advanced
16 and commercially available processes.

17 “(d) STRATEGIC PLAN.—

18 “(1) IN GENERAL.—Not later than 180 days
19 after the establishment of the program under sub-
20 section (b), the Secretary shall develop a 5-year stra-
21 tegic plan identifying research, development, dem-
22 onstration, and commercial application goals for
23 such program. The Secretary shall submit such plan
24 to the Committee on Science, Space, and Technology

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

3 “(2) CONTENTS.—The strategic plan under
4 paragraph (1) shall—

5 “(A) identify programs at the Department
6 related to the advanced production of low-emis-
7 sions cement, concrete, and asphalt that sup-
8 port the research, development, demonstration,
9 and commercial application activities described
10 in this section, and the demonstration projects
11 under subsection (f);

12 “(B) establish technological and pro-
13 grammatic goals to achieve the requirements
14 specified in subsection (e); and

15 “(C) include timelines for the accomplish-
16 ment of such goals developed under the plan.

17 “(3) UPDATES TO PLAN.—Not less than once
18 every two years, the Secretary shall submit to the
19 Committee on Science, Space, and Technology of the
20 House of Representatives and the Committee on En-
21 ergy and Natural Resources of the Senate an up-
22 dated version of the strategic plan under paragraph
23 (1).

1 “(e) FOCUS AREAS.—In carrying out the program
2 under subsection (b), the Secretary shall focus on the fol-
3 lowing:

4 “(1) Carbon capture technologies for low-emis-
5 sions cement, concrete, and asphalt production proc-
6 esses, which may include the following:

7 “(A) Oxycombustion and chemical looping
8 technologies.

9 “(B) Precombustion technologies.

10 “(C) Post combustion technologies.

11 “(D) Direct carbon dioxide separation
12 technologies.

13 “(2) Materials, technologies, inputs, and proc-
14 esses that—

15 “(A) produce fewer greenhouse gas or di-
16 rectly related copollutant emissions during pro-
17 duction, use, and end use of cement, concrete,
18 and asphalt; or

19 “(B) provide quality, durability, resilience,
20 engineering, or other performance metrics equal
21 to or greater than commercially available prod-
22 ucts.

23 “(3) Medium- and high-temperature heat-gen-
24 eration 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.

1 “(5) Technologies and approaches to reduce
2 greenhouse gas or directly related copollutant emis-
3 sions from the advanced production of cement, con-
4 crete, and asphalt.

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

9 “(A) Modeling, simulation, and optimiza-
10 tion of the design of cost-effective and energy-
11 efficient products and processes.

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

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

18 “(8) Technologies that can be retrofitted at ce-
19 ment, concrete, and asphalt plants that represent
20 the most common facility types in the United States
21 and in other countries, with consideration for field
22 validation of such retrofits.

23 “(9) Best practices for data standardization
24 and data sharing tools and technologies, in coordina-
25 tion with relevant Federal agencies.

1 “(10) Fundamental research in chemistry and
2 materials science to identify the following:

3 “(A) Novel materials and alternative do-
4 mestic feedstocks and processing operations for
5 the advanced production of low-emissions ce-
6 ment, concrete, and asphalt.

7 “(B) Improved understanding by eligible
8 entities of the mechanisms that determine the
9 performance and durability of low-emissions ce-
10 ment, concrete, and asphalt over time.

11 “(f) DEMONSTRATIONS.—

12 “(1) ESTABLISHMENT.—Not later than 180
13 days after the date of the enactment of this section,
14 the Secretary, in carrying out the program under
15 subsection (b), and in collaboration with the Sec-
16 retary of Transportation, the Administrator of Gen-
17 eral Services, industry partners, institutions of high-
18 er education, and National Laboratories, shall sup-
19 port demonstrations of advanced production of low-
20 emissions cement, concrete, and asphalt that uses ei-
21 ther—

22 “(A) a single technology or practice; or

23 “(B) a combination of multiple tech-
24 nologies or practices.

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

6 “(A) encourage regional diversity among
7 eligible entities, including participation by enti-
8 ties located in rural areas;

9 “(B) encourage technological diversity
10 among eligible entities; and

11 “(C) ensure that specific projects se-
12 lected—

13 “(i) expand on the existing technology
14 demonstration programs of the Depart-
15 ment;

16 “(ii) are based on the extent of green-
17 house gas emissions reductions achieved;
18 and

19 “(iii) prioritize leveraging matching
20 funds from non-Federal sources.

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

1 “(A) not less frequently than once every
2 two years for the duration of the demonstra-
3 tions under paragraph (1), a report describing
4 the performance of such demonstrations; and

5 “(B) if any such demonstration is termi-
6 nated, an assessment of the success of, and
7 education provided by, the measures carried out
8 by such demonstration.

9 “(4) TERMINATION.—The Secretary may termi-
10 nate the demonstrations under paragraph (1) if the
11 Secretary determines that sufficient low-emissions
12 cement, concrete, and asphalt produced through ad-
13 vanced production are commercially available domes-
14 tically at a price comparable to the price of cement,
15 concrete, and asphalt produced through traditional
16 methods of production.

17 “(g) TECHNICAL ASSISTANCE PROGRAM.—

18 “(1) IN GENERAL.—The Secretary, in consulta-
19 tion with the Secretary of Transportation, the Sec-
20 retary of Commerce (acting through the Director of
21 the National Institute of Standards and Tech-
22 nology), the Administrator of General Services, the
23 Administrator of the Environmental Protection
24 Agency, and appropriate representatives of relevant
25 standards development organizations, shall provide

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

6 “(2) ACTIVITIES DESCRIBED.—An activity re-
7 ferred to in paragraph (1) is any of the following:

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

12 “(B) A lifecycle assessment of the final
13 product.

14 “(C) An environmental impact comparison
15 between different cements, concretes, and as-
16 phalts.

17 “(D) A techno-economic assessment.

18 “(E) An environmental permitting or other
19 regulatory process.

20 “(F) An evaluation or testing activity.

21 “(G) Any other activity that promotes the
22 commercial application of technologies devel-
23 oped through the program under subsection (b).

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

4 “(A) on a competitive basis; and

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

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

11 “(h) ADDITIONAL COORDINATION.—

12 “(1) MANUFACTURING USA.—In carrying out
13 this section the Secretary shall consider the fol-
14 lowing:

15 “(A) Leveraging the resources of relevant
16 existing Manufacturing USA Institutes de-
17 scribed in section 34(d) of the National Insti-
18 tute of Standards and Technology Act (15
19 U.S.C. 278s(d)).

20 “(B) Integrating program activities into a
21 relevant existing Manufacturing USA Institute.

22 “(C) Awarding financial assistance, con-
23 sistent with section 34(e) of the National Insti-
24 tute of Standards and Technology Act (15
25 U.S.C. 278s(e)), to a person or group of per-

1 sons to assist the person or group of persons in
2 planning, establishing, or supporting a Manu-
3 facturing U.S.A. Institute focused on advanced
4 production of low-emissions cement, concrete,
5 and asphalt.

6 “(2) OTHER FEDERAL AGENCIES.—In carrying
7 out this section, the Secretary shall coordinate with
8 other Federal agencies, including the Department of
9 Defense, the Department of Transportation, and the
10 National Institute of Standards and Technology,
11 that are carrying out research and development ini-
12 tiatives to increase industrial competitiveness and
13 achieve measurable greenhouse gas or directly re-
14 lated copollutant emissions reductions through the
15 advanced production of cement, concrete, and as-
16 phalt.

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

19 “(j) RESEARCH SECURITY.—The activities author-
20 ized under this section shall be applied in a manner con-
21 sistent with subtitle D of title VI of the Research and De-
22 velopment, Competition, and Innovation Act (enacted as
23 division B of Public Law 117–167 (42 U.S.C. 19231 et
24 seq.)).

1 “(k) RULE OF CONSTRUCTION.—Nothing in this sec-
2 tion may be construed to amend, alter, or affect the au-
3 thorities of the Secretary to define, establish, or enforce
4 new environmental industry standards for, or related to,
5 cement, concrete, or asphalt.”.

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

“Sec. 40523. Advanced cement, concrete, and asphalt production research pro-
gram.”.

