

119TH CONGRESS
1ST SESSION

H. R. 1534

AN ACT

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,*

1 **SECTION 1. SHORT TITLE.**

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

5 **SEC. 2. ADVANCED CEMENT, CONCRETE, AND ASPHALT**6 **PRODUCTION RESEARCH PROGRAM.**

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

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

13 “(a) DEFINITIONS.—In this section:

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

20 “(A) Improved cost-effectiveness.

21 “(B) Improved quality, durability, engi-
22 neering performance, and resilience.

23 “(C) Improved efficiency of resource con-
24 sumption and material demand.

25 “(2) ALTERNATIVE FUELS.—The term ‘alter-
26 native fuels’ means any solid, liquid, or gaseous ma-

1 terials, or a combination thereof, used to replace or
2 supplement any portion of fuels used in combustion
3 or pyrolysis for low-emissions cement, concrete, or
4 asphalt.

5 “(3) COMMERCIALLY AVAILABLE.—The term
6 ‘commercially available’, with respect to cement, con-
7 crete, and asphalt, means that the cement, concrete,
8 or asphalt is—

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

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

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

16 “(A) An institution of higher education.

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

20 “(C) A nonprofit research institution.

21 “(D) A private entity.

22 “(E) Any other relevant entity the Sec-
23 retary determines appropriate.

1 “(F) A partnership or consortium of two
2 or more entities described in subparagraphs (A)
3 through (E).

4 “(5) ENGINEERING PERFORMANCE-BASED
5 STANDARD.—The term ‘engineering performance-
6 based standard’ means an existing engineering
7 standard with respect to which the requirements ap-
8 plicable to such standard are stated in terms of re-
9 quired results, with criteria for verifying compliance
10 rather than specific composition, design, or proce-
11 dure.

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

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

23 “(8) RURAL AREA.—The term ‘rural area’ has
24 the meaning given such term in section 343(a) of

1 the Consolidated Farm and Rural Development Act
2 (7 U.S.C. 1991(a)).

3 “(b) ESTABLISHMENT.—Not later than 180 days
4 after the date of the enactment of this section, the Sec-
5 retary shall establish a program of research, development,
6 demonstration, and commercial application of advanced
7 tools, technologies, and methods for advanced production
8 and use of low-emissions cement, concrete, and asphalt in
9 order to accomplish the following:

10 “(1) Increase the technological and economic
11 competitiveness of industry and production in the
12 United States.

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

16 “(3) Achieve measurable greenhouse gas or di-
17 rectly related copollutant emissions reductions in the
18 production processes for cement, concrete, and as-
19 phalt products.

20 “(4) Create quality domestic jobs.

21 “(c) REQUIREMENTS.—In carrying out the program
22 under subsection (b), the Secretary shall carry out the fol-
23 lowing:

24 “(1) Coordinate with the programs and activi-
25 ties authorized under title VI of division Z of the

1 Consolidated Appropriations Act, 2021 (relating to
2 industrial and manufacturing technologies) and the
3 amendments made by such title.

4 “(2) Coordinate across all relevant program of-
5 fices of the Department, including the Office of
6 Science, the Advanced Research Projects Agency-
7 Energy, the Office of Clean Energy Demonstrations,
8 the Office of Energy Efficiency and Renewable En-
9 ergy, the Office of Fossil Energy, the Office of In-
10 dustrial Efficiency and Decarbonization, the Office
11 of Manufacturing and Energy Supply Chains, and
12 the Office of Nuclear Energy.

13 “(3) Leverage, to the extent practicable, the re-
14 search infrastructure of the Department, including
15 scientific computing user facilities, x-ray light
16 sources, neutron scattering facilities, and nanoscale
17 science research centers.

18 “(4) Conduct research, development, dem-
19 onstration, and commercial application of the ad-
20 vanced production of low-emissions cement, concrete,
21 and asphalt that have the potential to increase do-
22 mestic production and employment in both advanced
23 and commercially available processes.

24 “(d) STRATEGIC PLAN.—

1 “(1) IN GENERAL.—Not later than 180 days
2 after the establishment of the program under sub-
3 section (b), the Secretary shall develop a 5-year stra-
4 tegic plan identifying research, development, dem-
5 onstration, and commercial application goals for
6 such program. The Secretary shall submit such plan
7 to the Committee on Science, Space, and Technology
8 of the House of Representatives and the Committee
9 on Energy and Natural Resources of the Senate.

10 “(2) CONTENTS.—The strategic plan under
11 paragraph (1) shall—

12 “(A) identify programs at the Department
13 related to the advanced production of low-emis-
14 sions cement, concrete, and asphalt that sup-
15 port the research, development, demonstration,
16 and commercial application activities described
17 in this section, and the demonstration projects
18 under subsection (f);

19 “(B) establish technological and pro-
20 grammatic goals to achieve the requirements
21 specified in subsection (c); and

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

24 “(3) UPDATES TO PLAN.—Not less than once
25 every two years, the Secretary shall submit to the

1 Committee on Science, Space, and Technology of the
2 House of Representatives and the Committee on En-
3 ergy and Natural Resources of the Senate an up-
4 dated version of the strategic plan under paragraph
5 (1).

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

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

12 “(A) Oxycombustion and chemical looping
13 technologies.

14 “(B) Precombustion technologies.

15 “(C) Post combustion technologies.

16 “(D) Direct carbon dioxide separation
17 technologies.

18 “(2) Materials, technologies, inputs, and proc-
19 esses that—

20 “(A) produce fewer greenhouse gas or di-
21 rectly related copollutant emissions during pro-
22 duction, use, and end use of cement, concrete,
23 and asphalt; or

24 “(B) provide quality, durability, resilience,
25 engineering, or other performance metrics equal

1 to or greater than commercially available prod-
2 ucts.

3 “(3) Medium- and high-temperature heat-gen-
4 eration technologies used for the advanced produc-
5 tion of low-emissions cement, concrete, and asphalt,
6 which may include the following:

7 “(A) Alternative fuels.

8 “(B) Renewable heat-generation and stor-
9 age technology.

10 “(C) Electrification of heating processes.

11 “(D) Other clean heat-generation tech-
12 nologies and sources.

13 “(4) Technologies and practices that increase
14 the efficiency of energy use, natural resource con-
15 sumption, or material demand, which may include
16 the following:

17 “(A) Designing products that encourage
18 reuse, refurbishment, remanufacturing, and re-
19 cycling.

20 “(B) Minimizing waste, including waste
21 heat, from low-emissions cement, concrete, and
22 asphalt production processes, including through
23 the reuse of waste as a resource in other indus-
24 trial processes for mutual benefit.

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

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

9 “(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:

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

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

18 “(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.

22 “(8) Technologies that can be retrofitted at cement, concrete, and asphalt plants that represent the most common facility types in the United States

1 and in other countries, with consideration for field
2 validation of such retrofits.

3 “(9) Best practices for data standardization
4 and data sharing tools and technologies, in coordina-
5 tion with relevant Federal agencies.

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

8 “(A) Novel materials and alternative do-
9 mestic feedstocks and processing operations for
10 the advanced production of low-emissions ce-
11 ment, concrete, and asphalt.

12 “(B) Improved understanding by eligible
13 entities of the mechanisms that determine the
14 performance and durability of low-emissions ce-
15 ment, concrete, and asphalt over time.

16 “(f) DEMONSTRATIONS.—

17 “(1) ESTABLISHMENT.—Not later than 180
18 days after the date of the enactment of this section,
19 the Secretary, in carrying out the program under
20 subsection (b), and in collaboration with the Sec-
21 retary of Transportation, the Administrator of Gen-
22 eral Services, industry partners, institutions of high-
23 er education, and National Laboratories, shall sup-
24 port demonstrations of advanced production of low-

1 emissions cement, concrete, and asphalt that uses ei-
2 ther—

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

4 “(B) a combination of multiple tech-
5 nologies or practices.

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

11 “(A) encourage regional diversity among
12 eligible entities, including participation by enti-
13 ties located in rural areas;

14 “(B) encourage technological diversity
15 among eligible entities; and

16 “(C) ensure that specific projects se-
17 lected—

18 “(i) expand on the existing technology
19 demonstration programs of the Depart-
20 ment;

21 “(ii) are based on the extent of green-
22 house gas emissions reductions achieved;
23 and

24 “(iii) prioritize leveraging matching
25 funds from non-Federal sources.

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

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

9 “(B) if any such demonstration is termi-
10 nated, an assessment of the success of, and
11 education provided by, the measures carried out
12 by such demonstration.

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

21 “(g) TECHNICAL ASSISTANCE PROGRAM.—

22 “(1) IN GENERAL.—The Secretary, in consulta-
23 tion with the Secretary of Transportation, the Sec-
24 retary of Commerce (acting through the Director of
25 the National Institute of Standards and Tech-

1 nology), the Administrator of General Services, the
2 Administrator of the Environmental Protection
3 Agency, and appropriate representatives of relevant
4 standards development organizations, shall provide
5 technical assistance to eligible entities to carry out
6 an activity described in paragraph (2) to promote
7 the commercial application of technologies for the
8 production and use of low-emissions cement, con-
9 crete, and asphalt.

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

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

16 “(B) A lifecycle assessment of the final
17 product.

18 “(C) An environmental impact comparison
19 between different cements, concretes, and as-
20 phalts.

21 “(D) A techno-economic assessment.

22 “(E) An environmental permitting or other
23 regulatory process.

24 “(F) An evaluation or testing activity.

1 “(G) Any other activity that promotes the
2 commercial application of technologies devel-
3 oped through the program under subsection (b).

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

7 “(A) on a competitive basis; and
8 “(B) on a periodic basis, but not less fre-
9 quently than once every 12 months.

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

14 “(h) ADDITIONAL COORDINATION.—

15 “(1) MANUFACTURING USA.—In carrying out
16 this section the Secretary shall consider the fol-
17 lowing:

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

23 “(B) Integrating program activities into a
24 relevant existing Manufacturing USA Institute.

1 “(C) Awarding financial assistance, con-
2 sistent with section 34(e) of the National Insti-
3 tute of Standards and Technology Act (15
4 U.S.C. 278s(e)), to a person or group of per-
5 sons to assist the person or group of persons in
6 planning, establishing, or supporting a Manu-
7 facturing U.S.A. Institute focused on advanced
8 production of low-emissions cement, concrete,
9 and asphalt.

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

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

23 “(j) RESEARCH SECURITY.—The activities author-
24 ized under this section shall be applied in a manner con-
25 sistent with subtitle D of title VI of the Research and De-

1 development, Competition, and Innovation Act (enacted as
2 division B of Public Law 117–167 (42 U.S.C. 19231 et
3 seq.)).

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

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

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

Passed the House of Representatives March 25,
2025.

Attest:

Clerk.

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