

119TH CONGRESS  
1ST SESSION

# H. R. 1534

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## 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 divi-  
8 sion D of the Infrastructure Investment and Jobs Act  
9 (Public Law 117–58) is amended by adding at the end  
10 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 effi-  
2           ciency of low-emissions cement, concrete, and  
3           asphalt production processes, including through  
4           life cycle assessments.

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

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

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

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

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

22           “(8) Technologies that can be retrofitted at ce-  
23          ment, concrete, and asphalt plants that represent  
24          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 velopment, 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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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.