

Union Calendar No. 434

118TH CONGRESS
2^D SESSION

H. R. 7685

[Report No. 118–522]

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

MARCH 15, 2024

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

MAY 23, 2024

Reported with an amendment, committed to the Committee of the Whole House on the State of the Union, and ordered to be printed

[Strike out all after the enacting clause and insert the part printed in *italie*]

[For text of introduced bill, see copy of bill as introduced on March 15, 2024]

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”.*

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

9 *(a) PROGRAM.—Part I of subtitle C of title V of the*
 10 *Infrastructure Investment and Jobs Act (Public Law 117–*
 11 *58) is amended by inserting after section 40522 the fol-*
 12 *lowing new section:*

13 **“SEC. 40523. ADVANCED CEMENT, CONCRETE, AND ASPHALT**
 14 **PRODUCTION RESEARCH PROGRAM.**

15 *“(a) DEFINITIONS.—In this section:*

16 *“(1) ADVANCED PRODUCTION.—The term ‘ad-*
 17 *vanced production’ means production of cement, con-*
 18 *crete, or asphalt with one or more of the following im-*
 19 *provements with respect to the production of commer-*
 20 *cially available cement, concrete, or asphalt:*

21 *“(A) Improved cost-effectiveness.*

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

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

1 “(2) *ALTERNATIVE FUELS.*—The term ‘alter-
2 *native fuels*’ means any solid, liquid, or gaseous mate-
3 *rials, or a combination thereof, used to replace or*
4 *supplement any portion of fuels used in combustion*
5 *or pyrolysis for low-emissions cement, concrete, or as-*
6 *phalt.*

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

11 “(A) *readily and widely available for pur-*
12 *chase in the United States; and*

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

16 “(4) *ELIGIBLE ENTITY.*—The term ‘eligible enti-
17 *ty*’ means any of the following:

18 “(A) *An institution of higher education.*

19 “(B) *An appropriate State or Federal enti-*
20 *ty, including a federally funded research and de-*
21 *velopment center of the Department.*

22 “(C) *A nonprofit research institution.*

23 “(D) *A private entity.*

24 “(E) *Any other relevant entity the Sec-*
25 *retary determines appropriate.*

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

4 “(5) *ENGINEERING PERFORMANCE-BASED STAND-*
5 *ARD.*—The term ‘engineering performance-based
6 standard’ means an existing engineering standard
7 with respect to which the requirements applicable to
8 such standard are stated in terms of required results,
9 with criteria for verifying compliance rather than
10 specific composition, design, or procedure.

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

15 “(7) *LOW-EMISSIONS CEMENT, CONCRETE, AND*
16 *ASPHALT.*—The term ‘low-emissions cement, concrete,
17 and asphalt’ means cement, concrete, asphalt binder,
18 or asphalt mixture that reduces, to the maximum ex-
19 tent practicable, greenhouse gas or directly-related co-
20 pollutant emissions to levels below commercially
21 available cement, concrete, or asphalt.

22 “(8) *RURAL AREA.*—The term ‘rural area’ has
23 the meaning given such term in section 343(a) of the
24 Consolidated Farm and Rural Development Act (7
25 U.S.C. 1991(a)).

1 “(b) *ESTABLISHMENT.*—Not later than 180 days after
2 the date of the enactment of this section, the Secretary shall
3 establish a program of research, development, demonstra-
4 tion, and commercial application of advanced tools, tech-
5 nologies, and methods for advanced production and use of
6 low-emissions cement, concrete, and asphalt in order to—

7 “(1) increase the technological and economic
8 competitiveness of industry and production in the
9 United States;

10 “(2) expand and increase the stability of supply
11 chains through enhanced domestic production,
12 nearshoring, and cooperation with allies;

13 “(3) achieve measurable greenhouse gas or di-
14 rectly related copollutant emissions reductions in the
15 production processes for cement, concrete, and asphalt
16 products; and

17 “(4) create quality domestic jobs.

18 “(c) *REQUIREMENTS.*—In carrying out the program
19 under subsection (b), the Secretary shall—

20 “(1) coordinate with the programs and activities
21 authorized under title VI of division Z of the Consoli-
22 dated Appropriations Act, 2021 (relating to indus-
23 trial and manufacturing technologies) and the
24 amendments made by such title;

1 “(2) coordinate across all relevant program of-
2 fices of the Department, including the Office of
3 Science, the Advanced Research Projects Agency-Energy, the Office of Clean Energy Demonstrations, the
4 Office of Energy Efficiency and Renewable Energy,
5 the Office of Fossil Energy, the Office of Industrial
6 Efficiency and Decarbonization, the Office of Manufacturing and Energy Supply Chains, and the Office
7 of Nuclear Energy;

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

13 “(4) conduct research, development, demonstra-
14 tion, and commercial application of the advanced
15 production of low-emissions cement, concrete, and as-
16 phalt that have the potential to increase domestic pro-
17 duction and employment in both advanced and com-
18 mercially available processes.

19 “(d) STRATEGIC PLAN.—

20 “(1) IN GENERAL.—Not later than 180 days
21 after the establishment of the program under sub-
22 section (b), the Secretary shall develop a 5-year strategic plan identifying research, development, dem-
23 onstrations, and commercialization of the program.
24 “(2) FUNDING.—Not later than 180 days after the establishment of the program under subsection (b), the Secretary shall develop a 5-year strategic plan identifying research, development, demonstrations, and commercialization of the program.
25 “(3) REPORT.—Not later than 180 days after the establishment of the program under subsection (b), the Secretary shall submit to the Committee on Energy and Commerce a report on the progress of the program under this subsection, including a description of the research, development, demonstrations, and commercialization of the program, and the Secretary shall submit to the Committee on Energy and Commerce a report on the progress of the program under this subsection, including a description of the research, development, demonstrations, and commercialization of the program.

1 *onstration, and commercial application goals for such*
 2 *program. The Secretary shall submit such plan to the*
 3 *Committee on Science, Space, and Technology of the*
 4 *House of Representatives and the Committee on En-*
 5 *ergy and Natural Resources of the Senate.*

6 *“(2) CONTENTS.—The strategic plan under para-*
 7 *graph (1) shall—*

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

15 *“(B) establish technological and pro-*
 16 *grammatic goals to achieve the requirements*
 17 *specified in subsection (c); and*

18 *“(C) include timelines for the accomplish-*
 19 *ment of such goals developed under the plan.*

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

1 “(e) *FOCUS AREAS.*—In carrying out the program es-
2 *tablished in subsection (c), the Secretary shall focus on the*
3 *following:*

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 tech-*
12 *nologies.*

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-genera-*
24 *tion technologies used for the advanced production of*

1 *low-emissions cement, concrete, and asphalt which*
2 *may include the following:*

3 “(A) *Alternative fuels.*

4 “(B) *Renewable heat-generation and storage*
5 *technology.*

6 “(C) *Electrification of heating processes.*

7 “(D) *Other clean heat-generation tech-*
8 *nologies and sources.*

9 “(4) *Technologies and practices that increase the*
10 *efficiency of energy use, natural resource consump-*
11 *tion, or material demand, which may include the fol-*
12 *lowing:*

13 “(A) *Designing products that encourage*
14 *reuse, refurbishment, remanufacturing, and recy-*
15 *cling.*

16 “(B) *Minimizing waste, including waste*
17 *heat, from low-emissions cement, concrete, and*
18 *asphalt production processes, including through*
19 *the reuse of waste as a resource in other indus-*
20 *trial processes for mutual benefit.*

21 “(C) *Increasing the overall energy efficiency*
22 *of low-emissions cement, concrete, and asphalt*
23 *production processes, including through life cycle*
24 *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 ad-*
6 *vanced materials and production processes that may*
7 *contribute to the focus areas described in paragraphs*
8 *(1) through (5), including the following:*

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

12 “(B) *The use of digital prototyping and ad-*
13 *ditive production to enhance product design.*

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

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

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

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

3 “(A) *Novel materials and alternative domes-*
 4 *tic feedstocks and processing operations for the*
 5 *advanced production of low-emissions cement,*
 6 *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 days*
 13 *after the date of the enactment of this section, the Sec-*
 14 *retary, in carrying out the program established in*
 15 *subsection (b), and in collaboration with the Sec-*
 16 *retary of Transportation, the Administrator of Gen-*
 17 *eral Services, industry partners, institutions of higher*
 18 *education, and National Laboratories, shall support*
 19 *demonstrations of advanced production of low-emis-*
 20 *sions cement, concrete, and asphalt that uses either—*

21 “(A) *a single technology or practice; or*

22 “(B) *a combination of multiple technologies*
 23 *or practices.*

24 “(2) *SELECTION REQUIREMENTS.—In carrying*
 25 *out the demonstrations under paragraph (1), the Sec-*

1 *retary shall select eligible entities to carry out dem-*
2 *onstration projects and to the maximum extent prac-*
3 *ticable—*

4 *“(A) encourage regional diversity among el-*
5 *igible entities, including participation by enti-*
6 *ties located in rural areas;*

7 *“(B) encourage technological diversity*
8 *among eligible entities; and*

9 *“(C) ensure that specific projects selected—*

10 *“(i) expand on the existing technology*
11 *demonstration programs of the Department;*

12 *“(ii) are based on the extent of green-*
13 *house gas emissions reductions achieved;*
14 *and*

15 *“(iii) prioritize leveraging matching*
16 *funds from non-Federal sources.*

17 *“(3) REPORTS.—The Secretary shall submit to*
18 *the Committee on Science, Space, and Technology of*
19 *the House of Representatives and the Committee on*
20 *Energy and Natural Resources of the Senate—*

21 *“(A) not less frequently than once every two*
22 *years for the duration of the demonstrations*
23 *under paragraph (1), a report describing the*
24 *performance of such demonstration; and*

1 “(B) if any such demonstration is termi-
2 nated, an assessment of the success of, and edu-
3 cation provided by, the measures carried out by
4 such demonstration.

5 “(4) *TERMINATION.*—The Secretary may termi-
6 nate the demonstratives under paragraph (1) if the
7 Secretary determines that sufficient low-emissions ce-
8 ment, concrete, and asphalt produced through ad-
9 vanced production are commercially available domes-
10 tically at a price comparable to the price of cement,
11 concrete, and asphalt produced through traditional
12 methods of production.

13 “(g) *TECHNICAL ASSISTANCE PROGRAM.*—

14 “(1) *IN GENERAL.*—The Secretary, in consulta-
15 tion with the Secretary of Transportation, the Sec-
16 retary of Commerce (acting through the Director of
17 the National Institute of Standards and Technology),
18 the Administrator of General Services, the Adminis-
19 trator of the Environmental Protection Agency, and
20 appropriate representatives of relevant standards de-
21 velopment organizations, shall provide technical as-
22 sistance to eligible entities to carry out an activity
23 described in paragraph (2) to promote the commercial
24 application of technologies for the production and use
25 of low-emissions cement, concrete, and asphalt.

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

3 “(A) *Efforts related to collecting data that*
4 *could be used in the updating of local codes,*
5 *specifications, and standards to engineering per-*
6 *formance-based standards.*

7 “(B) *A lifecycle assessment of the final*
8 *product.*

9 “(C) *An environmental impact comparison*
10 *between different cements, concretes, and as-*
11 *phalts.*

12 “(D) *A techno-economic assessment.*

13 “(E) *An environmental permitting or other*
14 *regulatory process.*

15 “(F) *An evaluation or testing activity.*

16 “(G) *Any other activity that promotes the*
17 *commercial application of technologies developed*
18 *through the program under subsection (b).*

19 “(3) *APPLICATIONS.*—The Secretary shall seek
20 *applications for technical assistance under this sub-*
21 *section—*

22 “(A) *on a competitive basis; and*

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

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

5 “(h) *ADDITIONAL COORDINATION.*—

6 “(1) *MANUFACTURING USA.*—*In carrying out*
 7 *this section the Secretary shall consider—*

8 “(A) *leveraging the resources of relevant ex-*
 9 *isting Manufacturing USA Institutes described*
 10 *in section 34(d) of the National Institute of*
 11 *Standards and Technology Act (15 U.S.C.*
 12 *278s(d));*

13 “(B) *integrating program activities into a*
 14 *relevant existing Manufacturing USA Institute;*
 15 *or*

16 “(C) *awarding financial assistance, con-*
 17 *sistent with section 34(e) of the National Insti-*
 18 *tute of Standards and Technology Act (15 U.S.C.*
 19 *278s(e)), to a person or group of persons to assist*
 20 *the person or group of persons in planning, es-*
 21 *tablishing, or supporting a Manufacturing*
 22 *U.S.A. institute focused on advanced production*
 23 *of low-emissions cement, concrete, and asphalt.*

24 “(2) *OTHER FEDERAL AGENCIES.*—*In carrying*
 25 *out this section, the Secretary shall coordinate with*

1 *other Federal agencies, including the Department of*
 2 *Defense, the Department of Transportation, and the*
 3 *National Institute of Standards and Technology, that*
 4 *are carrying out research and development initiatives*
 5 *to increase industrial competitiveness and achieve*
 6 *measurable greenhouse gas or directly related co-*
 7 *pollutant emissions reductions through the advanced*
 8 *production of cement, concrete, and asphalt.*

9 “(i) *SUNSET.*—*This section shall terminate seven*
 10 *years after the date of the enactment of this section.*”

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

16 “(k) *RULE OF CONSTRUCTION.*—*Nothing in this sec-*
 17 *tion may be construed to amend, alter, or affect the authori-*
 18 *ties of the Secretary to define, establish, or enforce new envi-*
 19 *ronmental industry standards for, or related to, cement,*
 20 *concrete, or asphalt.”.*

21 (b) *CLERICAL AMENDMENT.*—*The table of contents in*
 22 *section 1(b) of the Infrastructure Investment and Jobs Act*
 23 *is amended by inserting after the item relating to section*
 24 *40522 the following new item:*

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

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