

115TH CONGRESS
2D SESSION

S. _____

To encourage the research and use of innovative materials and associated techniques in the construction and preservation of the domestic transportation and water infrastructure system, and for other purposes.

IN THE SENATE OF THE UNITED STATES

Mr. WHITEHOUSE (for himself, Mr. ALEXANDER, Mr. ROUNDS, and Mr. BOOKER) introduced the following bill; which was read twice and referred to the Committee on _____

A BILL

To encourage the research and use of innovative materials and associated techniques in the construction and preservation of the domestic transportation and water infrastructure system, 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 Materials
5 for America’s Growth and Infrastructure Newly Expanded
6 Act of 2018” or the “IMAGINE Act”.

7 **SEC. 2. PURPOSES.**

8 The purposes of this Act are—

1 (1) to encourage the research and use of inno-
2 vative materials, in concert with traditional mate-
3 rials, and associated techniques in the construction
4 and preservation of the domestic infrastructure net-
5 work;

6 (2) to accelerate the deployment and extend the
7 service life, improve the performance, and reduce the
8 cost of infrastructure projects; and

9 (3) to improve the economy, resilience, main-
10 tainability, sustainability, and safety of the domestic
11 infrastructure network.

12 **SEC. 3. DEFINITION OF INNOVATIVE MATERIAL.**

13 In this Act, the term “innovative material”, with re-
14 spect to an infrastructure project, includes high perform-
15 ance asphalt mixtures and concrete formulations,
16 geosynthetic materials, advanced alloys and metals, rein-
17 forced polymer composites, including any coating or other
18 corrosion prevention method used in conjunction with
19 those materials, advanced polymers, and any other mate-
20 rial or aggregate materials, as determined by the appro-
21 priate agency or department head.

22 **SEC. 4. INTERAGENCY INNOVATIVE MATERIALS STAND-**
23 **ARDS TASK FORCE.**

24 (a) ESTABLISHMENT.—

1 (1) IN GENERAL.—Not later than 180 days
2 after the date of enactment of this Act, the Director
3 of the National Institute of Standards and Tech-
4 nology shall establish an Interagency Innovative Ma-
5 terials Standards Task Force (referred to in this
6 section as the “Task Force”) composed of the heads
7 of Federal agencies responsible for significant civil
8 infrastructure projects, including—

9 (A) the Administrator of the Federal High-
10 way Administration;

11 (B) the Commanding General and Chief of
12 Engineers of the Corps of Engineers;

13 (C) the Assistant Secretary of the Army
14 for Civil Works; and

15 (D) the Administrator of the Environ-
16 mental Protection Agency.

17 (2) CHAIRPERSON.—The Director of the Na-
18 tional Institute of Standards and Technology shall
19 serve as Chairperson of the Task Force.

20 (b) PURPOSE.—The Task Force shall coordinate and
21 improve, with respect to infrastructure construction, retro-
22 fitting, rehabilitation, and other improvements—

23 (1) Federal testing standards;

24 (2) Federal design and use guidelines; and

25 (3) other applicable standards.

1 (c) REPORT.—

2 (1) IN GENERAL.—Not later than 18 months
3 after the date of enactment of this Act, the Task
4 Force shall conduct, and submit to the appropriate
5 committees of Congress a report that describes the
6 results of, a study—

7 (A) to assess the standards for the use of
8 innovative materials in infrastructure projects;
9 and

10 (B) to identify any barriers relating to the
11 standards described in subparagraph (A) that
12 preclude the use of certain products or associ-
13 ated techniques.

14 (2) REPORT.—The report under paragraph (1)
15 shall—

16 (A) identify any non-Federal entities or
17 other organizations, including the American As-
18 sociation of State Highway and Transportation
19 Officials, that develop relevant standards; and

20 (B) outline a strategy to improve coordina-
21 tion and information sharing between the enti-
22 ties described in subparagraph (A) and any rel-
23 evant Federal agencies.

24 (d) IMPROVED COORDINATION.—Not later than 2
25 years after the date of enactment of this Act, the Task

1 Force shall collaborate with any non-Federal entity identi-
2 fied under subsection (c)(2)(A)—

3 (1) to identify and carry out appropriate re-
4 search, testing methods, and processes relating to
5 the development and use of innovative materials;

6 (2) to develop new methods and processes relat-
7 ing to the development and use of innovative mate-
8 rials, as the applicable agency head determines to be
9 necessary; and

10 (3) to contribute to the development of stand-
11 ards and guidelines for the use of innovative mate-
12 rials and approaches in civil infrastructure projects.

13 **SEC. 5. INNOVATIVE MATERIAL INNOVATION HUBS.**

14 (a) DEFINITIONS.—In this section:

15 (1) HUB.—The term “Hub” means an Innova-
16 tive Material Innovation Hub established under this
17 section.

18 (2) QUALIFYING ENTITY.—The term “quali-
19 fying entity” means—

20 (A) an institution of higher education (as
21 defined in section 101(a) of the Higher Edu-
22 cation Act of 1965 (20 U.S.C. 1001(a)));

23 (B) an appropriate Federal or State entity,
24 including a federally funded research and devel-

1 opment center of the Department of Transpor-
2 tation;

3 (C) a university transportation center
4 under section 5505 of title 49, United States
5 Code;

6 (D) an Innovative Material Innovation
7 Hub in existence on the date of enactment of
8 this Act; and

9 (E) any other relevant entity the Secretary
10 determines to be appropriate.

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

13 (b) AUTHORIZATION OF PROGRAM.—

14 (1) IN GENERAL.—The Secretary shall carry
15 out a program to enhance the development of inno-
16 vative materials in the United States by making
17 awards to consortia for establishing and operating
18 new Hubs, to be known as “Innovative Material In-
19 novation Hubs”, to conduct and support multidisci-
20 plinary, collaborative research, development, dem-
21 onstration, and commercial application of innovative
22 materials.

23 (2) LOCATION OF HUBS.—To the extent prac-
24 ticable, each Hub shall be located at 1 centralized lo-
25 cation.

1 (3) TECHNOLOGY DEVELOPMENT FOCUS.—The
2 Secretary shall designate for each new Hub a unique
3 innovative material focus, such as material develop-
4 ment, infrastructure applications, and other focus
5 areas identified by the Secretary.

6 (4) COORDINATION.—The Secretary shall en-
7 sure the coordination of, and avoid unnecessary du-
8 plication of, the activities of each Hub with the ac-
9 tivities of—

10 (A) other research entities of the Depart-
11 ment of Transportation, including the Federal
12 Highway Administration;

13 (B) the National Laboratories (as defined
14 in section 2 of the Energy Policy Act of 2005
15 (42 U.S.C. 15801));

16 (C) the Corps of Engineers;

17 (D) the Environmental Protection Agency;

18 (E) the Federal Emergency Management
19 Agency;

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

22 (G) the Department of Defense;

23 (H) an industry consortium meeting the
24 requirements under subsection (c)(1); and

1 (I) any other Federal agencies or industry
2 consortia conducting substantially similar work.

3 (c) APPLICATION PROCESS.—

4 (1) ELIGIBILITY.—To be eligible to receive an
5 award for the establishment and operation of a Hub
6 under subsection (b)(1), a consortium shall—

7 (A) be composed of not fewer than 2 quali-
8 fying entities;

9 (B) operate subject to a binding agree-
10 ment, entered into by each member of the con-
11 sortium, that documents—

12 (i) the proposed partnership agree-
13 ment, including the governance and man-
14 agement structure of the Hub;

15 (ii) measures the consortium will un-
16 dertake to enable cost-effective implemen-
17 tation of activities under the program de-
18 scribed in subsection (b)(1); and

19 (iii) a proposed budget, including fi-
20 nancial contributions from non-Federal
21 sources; and

22 (C) operate as a nonprofit organization.

23 (2) APPLICATION.—

24 (A) IN GENERAL.—A consortium seeking
25 to establish and operate a Hub under sub-

1 section (b)(1) shall submit to the Secretary an
2 application at such time, in such manner, and
3 containing such information as the Secretary
4 may require, including a detailed description
5 of—

6 (i) each element of the consortium
7 agreement required under paragraph
8 (1)(B); and

9 (ii) any existing facilities the consor-
10 tium intends to provide for Hub activities.

11 (B) REQUIREMENT.—If the consortium
12 members will not be located at 1 centralized lo-
13 cation, the application under subparagraph (A)
14 shall include a communications plan that en-
15 sures close coordination and integration of Hub
16 activities.

17 (3) SELECTION.—

18 (A) IN GENERAL.—The Secretary shall se-
19 lect consortia for awards for the establishment
20 and operation of Hubs through a competitive
21 selection process.

22 (B) CONSIDERATIONS.—In selecting con-
23 sortia under subparagraph (A), the Secretary
24 shall consider—

1 (i) the information disclosed by the
2 consortium under this subsection;

3 (ii) any existing facilities a consortium
4 will provide for Hub activities; and

5 (iii) maintaining regional variety in lo-
6 cations of selected Hubs.

7 (d) TERM.—An award made to a Hub under this sec-
8 tion shall be for a period of not more than 5 years, subject
9 to the availability of appropriations, after which the award
10 may be renewed, subject to a rigorous merit review.

11 (e) HUB OPERATIONS.—

12 (1) IN GENERAL.—Each Hub shall conduct or
13 provide for multidisciplinary, collaborative research,
14 development, demonstration, and commercial appli-
15 cation of innovative materials within the technology
16 development focus designated under subsection
17 (b)(3).

18 (2) ACTIVITIES.—Each Hub shall—

19 (A) encourage collaboration and commu-
20 nication among the member qualifying entities
21 of the consortium as described in subsection
22 (c)(1) and awardees;

23 (B) develop and publish proposed plans
24 and programs on a publicly accessible website;

1 (C) submit to the Department of Trans-
2 portation an annual report summarizing the ac-
3 tivities of the Hub, including information—

4 (i) detailing organizational expendi-
5 tures; and

6 (ii) describing each project under-
7 taken by the Hub; and

8 (D) monitor project implementation and
9 coordination.

10 (3) CONFLICTS OF INTEREST.—Each Hub shall
11 maintain conflict of interest procedures, consistent
12 with the conflict of interest procedures of the De-
13 partment of Transportation.

14 (4) PROHIBITION ON CONSTRUCTION.—

15 (A) IN GENERAL.—Except as provided in
16 subparagraph (B)—

17 (i) no funds provided under this sec-
18 tion may be used for construction of new
19 buildings or facilities for Hubs; and

20 (ii) construction of new buildings or
21 facilities shall not be considered as part of
22 the non-Federal share of a Hub cost-shar-
23 ing agreement.

24 (B) TEST BED AND RENOVATION EXCEP-
25 TION.—Nothing in this paragraph prohibits the

1 use of funds provided under this section or non-
2 Federal cost share funds for the construction of
3 a test bed or renovations to existing buildings
4 or facilities for the purposes of research if the
5 Secretary determines that the test bed or ren-
6 ovations are limited to a scope and scale nec-
7 essary for the research to be conducted.

8 **SEC. 6. TURNER-FAIRBANK HIGHWAY RESEARCH CENTER.**

9 Section 503(b)(7) of title 23, United States Code, is
10 amended by adding at the end the following:

11 “(C) INNOVATIVE MATERIALS.—

12 “(i) DEFINITION OF INNOVATIVE MA-
13 TERIAL.—In this subparagraph, the term
14 ‘innovative material’ includes high per-
15 formance asphalt mixtures and concrete
16 formulations, geosynthetic materials, ad-
17 vanced alloys and metals, reinforced poly-
18 mer composites, including any coating or
19 other corrosion prevention method used in
20 conjunction with those materials, advanced
21 polymers, and any other material or aggre-
22 gate materials, as determined by the ap-
23 propriate agency or department head.

24 “(ii) COLLABORATION WITH STATES
25 AND TRIBES.—The Secretary shall expand

1 the capacity of the Turner-Fairbank High-
2 way Research Center to collaborate with
3 relevant State and Tribal agencies—

4 “(I) with respect to the use of in-
5 novative materials in construction
6 projects carried out by the State and
7 Tribal agencies; and

8 “(II) to understand and iden-
9 tify—

10 “(aa) the needs of the State
11 and Tribal agencies; and

12 “(bb) innovative materials
13 that may be further researched,
14 developed, and used to meet
15 those needs.

16 “(iii) ACTIVITIES.—The collaboration
17 described in clause (ii) may include—

18 “(I) the development of new
19 training for State and Tribal agencies;
20 and

21 “(II) the expansion of technical
22 training that involves State or Tribal
23 departments of transportation in the
24 development of new construction de-
25 signs for innovative materials at the

1 Turner-Fairbank Highway Research
2 Center.

3 “(iv) PRIORITY RESEARCH.—The Tur-
4 ner-Fairbank Highway Research Center
5 shall prioritize research relating to—

6 “(I) the use of innovative mate-
7 rials in—

8 “(aa) bridges with a span
9 equal to or greater than 50 feet;

10 “(bb) highway reconstruc-
11 tion and rehabilitation; and

12 “(cc) rural road infrastruc-
13 ture; and

14 “(II) coastal resiliency.

15 “(v) FUNDING.—Of the amounts
16 made available to carry out this paragraph,
17 the Secretary shall set aside \$8,000,000 to
18 carry out this subparagraph.

19 “(D) AUTHORIZATION OF APPROPRIA-
20 TIONS.—There is authorized to be appropriated
21 to carry out this paragraph for each of fiscal
22 years 2019 through 2023 an amount equal to
23 the sum of—

1 “(i) the amount appropriated to carry
2 out this paragraph for fiscal year 2018;
3 and
4 “(ii) \$8,000,000.”.

5 **SEC. 7. INNOVATIVE BRIDGE PROGRAM.**

6 (a) DEFINITION OF ADMINISTRATOR.—In this sec-
7 tion, the term “Administrator” means the Administrator
8 of the Federal Highway Administration.

9 (b) ESTABLISHMENT.—The Administrator shall es-
10 tablish a grant program, to be known as the “Innovative
11 Bridge Program”, to provide grants to State departments
12 of transportation, Tribal governments, or units of local
13 government for coastal and rural infrastructure bridge
14 projects.

15 (c) APPLICATIONS.—To be eligible to receive a grant
16 under subsection (b), a State department of transpor-
17 tation or unit of Tribal or local government shall submit
18 to the Administrator an application at such time, in such
19 manner, and containing such information as the Adminis-
20 trator may require.

21 (d) ELIGIBLE PROJECTS.—To be eligible to receive
22 a grant under subsection (b) or (g), a coastal or rural in-
23 frastructure bridge project or a value engineering project
24 shall—

1 (1) be for the purpose of construction, preserva-
2 tion, rehabilitation, or reconstruction of a bridge
3 with a span equal to or greater than 50 feet;

4 (2) be carried out in a manner so as to reduce
5 traffic impact;

6 (3) use innovative materials that—

7 (A) are resistant to corrosion; and

8 (B) extend the service life of the bridge;

9 and

10 (4) reduce preservation costs, as compared to
11 conventionally designed and constructed bridges.

12 (e) PREFERENCES.—In providing grants under this
13 section, the Administrator shall give preference to pro-
14 posed projects that—

15 (1) use materials that are domestically pro-
16 duced and sourced;

17 (2) use nontraditional production techniques,
18 such as factory prefabrication; and

19 (3) retrofit a bridge.

20 (f) SPECIAL CONSIDERATION FOR AT-RISK AREAS.—

21 In providing grants under this section, the Administrator
22 shall give special consideration to projects located in rural
23 areas or areas prone to coastal or inland flooding due to
24 severe storms (such as hurricanes or rain bursts), storm

1 surges, or projected sea level rise during the projected life-
2 time of the project.

3 (g) VALUE ENGINEERING USING INNOVATIVE MATE-
4 RIALS.—Of the amounts made available to carry out this
5 section, the Administrator shall set aside \$10,000,000 for
6 each of fiscal years 2019 through 2023 to provide funding
7 to 1 or more State departments of transportation or units
8 of Tribal or local government that submit to the Adminis-
9 trator an application to carry out value engineering of a
10 standard bridge design to enhance the performance of the
11 bridge (including extending the service life of the bridge,
12 increasing resistance to corrosion, and reducing construc-
13 tion and preservation costs) through the use of innovative
14 materials.

15 (h) REPORTS.—Not later than 4 years after the date
16 of enactment of this Act, and not less frequently than
17 every 2 years thereafter, the Administrator shall submit
18 to the appropriate committees of Congress and make pub-
19 licly available a report describing the status of each project
20 carried out using funds awarded under this section.

21 (i) AUTHORIZATION OF APPROPRIATIONS.—There is
22 authorized to be appropriated to the Administrator to
23 carry out this section \$65,000,000 for each of fiscal years
24 2019 through 2023.

1 **SEC. 8. WATER INFRASTRUCTURE INNOVATION PROGRAM.**

2 (a) ESTABLISHMENT.—The Administrator of the En-
3 vironmental Protection Agency (referred to in this section
4 as the “Administrator”) shall establish a grant program,
5 to be known as the “Water Infrastructure Innovation Pro-
6 gram”, to provide grants for the design and installation
7 of water infrastructure projects, including wastewater
8 transport and treatment systems and drinking water
9 treatment and distribution systems, that use innovative
10 materials to reduce total costs, including operation and
11 preservation expenses, and extend the service life of in-
12 stalled structures.

13 (b) APPLICATIONS.—To be eligible to receive a grant
14 under subsection (a), an applicant shall submit to the Ad-
15 ministrator an application at such time, in such manner,
16 and containing such information as the Administrator may
17 require.

18 (c) ELIGIBLE PROJECTS.—To be eligible to receive
19 a grant under subsection (a), a water infrastructure
20 project shall—

21 (1) serve a community with a population be-
22 tween 3,301 and 99,999; and

23 (2) use innovative materials that—

24 (A) are resistant to degradation;

25 (B) extend service life; or

1 (C) provide long-term protection of water
2 facilities and systems.

3 (d) PREFERENCE.—In providing grants under this
4 section, the Administrator shall give preference to pro-
5 posed projects that use materials that are domestically
6 produced and sourced.

7 (e) SPECIAL CONSIDERATION FOR AT-RISK AREAS.—
8 In providing grants under this section, the Administrator
9 shall give special consideration to projects located in areas
10 that are prone to saltwater intrusion or flooding due to
11 severe storms, rain bursts, storm surges, or projected sea
12 level rise during the projected lifetime of the project.

13 (f) REPORTS.—Not later than 4 years after the date
14 of enactment of this Act, and not less frequently than
15 every 2 years thereafter, the Administrator shall submit
16 to the appropriate committees of Congress and make pub-
17 licly available a report describing the status of each project
18 carried out using funds awarded under this section.

19 (g) AUTHORIZATION OF APPROPRIATIONS.—There is
20 authorized to be appropriated to the Administrator to
21 carry out this section \$65,000,000 for each of fiscal years
22 2019 through 2023.