

118TH CONGRESS
1ST 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 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 2023” 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. INTERAGENCY INNOVATIVE MATERIALS STAND-**
13 **ARDS TASK FORCE.**

14 (a) DEFINITION OF INNOVATIVE MATERIAL.—In this
15 section, the term “innovative material”, with respect to
16 an infrastructure project, includes a material, or a com-
17 bination or process for use of materials, that, as deter-
18 mined by the appropriate Secretary or agency head—

19 (1) enhances the overall service life, sustain-
20 ability, and resiliency of the project; or

21 (2) provides ancillary benefits relative to widely
22 adopted state of practice technologies.

23 (b) PURPOSES.—The purposes of this section are—

24 (1) to encourage the research, design, and use
25 of innovative materials, in concert with traditional

1 materials, and associated techniques in the construc-
2 tion and preservation of the domestic infrastructure
3 network;

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

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

10 (c) ESTABLISHMENT.—

11 (1) IN GENERAL.—Not later than 180 days
12 after the date of enactment of this Act, the Director
13 of the National Institute of Standards and Tech-
14 nology shall establish an Interagency Innovative Ma-
15 terials Standards Task Force (referred to in this
16 section as the “Task Force”) composed of the heads
17 of Federal agencies responsible for significant civil
18 infrastructure projects, including the Administrator
19 of the Federal Highway Administration.

20 (2) CHAIRPERSON.—The Director of the Na-
21 tional Institute of Standards and Technology shall
22 serve as Chairperson of the Task Force.

23 (d) DUTIES.—The Task Force shall coordinate and
24 improve, with respect to infrastructure construction, retro-
25 fitting, rehabilitation, and other improvements—

- 1 (1) Federal testing standards;
- 2 (2) Federal design and use guidelines;
- 3 (3) Federal regulations; and
- 4 (4) other applicable standards and performance
- 5 and sustainability metrics.

6 (e) REPORT.—

7 (1) IN GENERAL.—Not later than 18 months
8 after the date of enactment of this Act, the Task
9 Force shall conduct, and submit to the appropriate
10 committees of Congress a report that describes the
11 results of, a study—

12 (A) to assess the standards and perform-
13 ance metrics for the use of innovative materials
14 in infrastructure projects;

15 (B) to identify any barriers, regulatory or
16 otherwise, relating to the standards described in
17 subparagraph (A) that preclude the use of cer-
18 tain products or associated techniques; and

19 (C) to identify opportunities for the devel-
20 opment of standardized designs and materials
21 genome approaches that design and use innova-
22 tive materials to reduce costs, improve perform-
23 ance and sustainability, and extend the service
24 life of infrastructure assets.

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

3 (A) identify any non-Federal entities or
4 other organizations, including the American As-
5 sociation of State Highway and Transportation
6 Officials, that develop relevant standards; and

7 (B) outline a strategy to improve coordina-
8 tion and information sharing between the enti-
9 ties described in subparagraph (A) and any rel-
10 evant Federal agencies.

11 (f) IMPROVED COORDINATION.—Not later than 2
12 years after the date of enactment of this Act, the Task
13 Force shall collaborate with any non-Federal entity identi-
14 fied under subsection (e)(2)(A)—

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

18 (2) to develop new methods and processes relat-
19 ing to the development and use of innovative mate-
20 rials, as the applicable agency head determines to be
21 necessary;

22 (3) to contribute to the development of stand-
23 ards, performance metrics, and guidelines for the
24 use of innovative materials and approaches in civil
25 infrastructure projects;

1 (4) to develop a plan for addressing potential
2 barriers, regulatory or otherwise, identified in sub-
3 section (e)(1)(B); and

4 (5) to develop a plan for the development of
5 standardized designs that use innovative materials to
6 reduce costs, improve performance and sustain-
7 ability, and extend the service life of infrastructure
8 assets.

9 **SEC. 4. INNOVATIVE MATERIAL INNOVATION HUBS.**

10 (a) DEFINITIONS.—In this section:

11 (1) HUB.—The term “Hub” means an Innova-
12 tive Material Innovation Hub established under this
13 section.

14 (2) INNOVATIVE MATERIAL.—The term “inno-
15 vative material”, with respect to an infrastructure
16 project, includes a material, or a combination or
17 process for use of materials, that, as determined by
18 the Secretary—

19 (A) enhances the overall service life, sus-
20 tainability, and resiliency of the project; or

21 (B) provides ancillary benefits relative to
22 widely adopted state of practice technologies.

23 (3) QUALIFYING ENTITY.—The term “quali-
24 fying entity” means—

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

4 (B) an appropriate Federal or State entity,
5 including a federally-funded research and devel-
6 opment center of the Department of Transpor-
7 tation;

8 (C) a university transportation center
9 under section 5505 of title 49, United States
10 Code; and

11 (D) a research and development entity in
12 existence on the date of enactment of this Act
13 focused on innovative materials that the Sec-
14 retary determines to be similar in scope and in-
15 tent to a Hub.

16 (4) SECRETARY.—The term “Secretary” means
17 the Secretary of Transportation.

18 (b) ESTABLISHMENT.—

19 (1) IN GENERAL.—The Secretary shall carry
20 out a program to enhance the development of inno-
21 vative materials in the United States by making
22 awards to consortia for establishing and operating
23 Innovative Material Innovation Hubs to conduct and
24 support multidisciplinary, collaborative research, de-
25 velopment, demonstration, standardized design de-

1 velopment, and commercial application of innovative
2 materials.

3 (2) COORDINATION.—The Secretary shall en-
4 sure the coordination of, and avoid duplication of,
5 the activities of each Hub with the activities of—

6 (A) other research entities of the Depart-
7 ment of Transportation, including the Federal
8 Highway Administration; and

9 (B) research entities of other Federal
10 agencies, as appropriate.

11 (c) COMPETITIVE SELECTION PROCESS.—

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

15 (A) be composed of not fewer than 2 quali-
16 fying entities;

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

20 (i) the proposed partnership agree-
21 ment, including the governance and man-
22 agement structure of the Hub;

23 (ii) measures the consortium will un-
24 dertake to enable cost-effective implemen-

1 tation of activities under the program de-
2 scribed in subsection (b)(1); and

3 (iii) a proposed budget, including fi-
4 nancial contributions from non-Federal
5 sources; and

6 (C) operate as a nonprofit organization.

7 (2) APPLICATION.—

8 (A) IN GENERAL.—A consortium seeking
9 to establish and operate a Hub under sub-
10 section (b)(1) shall submit to the Secretary an
11 application at such time, in such manner, and
12 containing such information as the Secretary
13 may require, including a detailed description
14 of—

15 (i) each element of the consortium
16 agreement required under paragraph
17 (1)(B); and

18 (ii) any existing facilities the Consor-
19 tium intends to use for Hub activities.

20 (B) REQUIREMENT.—If the consortium
21 members will not be located at 1 centralized lo-
22 cation, the application under subparagraph (A)
23 shall include a communications plan that en-
24 sures close coordination and integration of Hub
25 activities.

1 (3) SELECTION.—

2 (A) IN GENERAL.—The Secretary shall se-
3 lect consortia for awards for the establishment
4 and operation of Hubs through a competitive
5 selection process.

6 (B) CONSIDERATIONS.—In selecting con-
7 sortia under subparagraph (A), the Secretary
8 shall consider—

9 (i) any existing facilities a consortium
10 has identified to be used for Hub activities;

11 (ii) maintaining geographic diversity
12 in locations of selected Hubs;

13 (iii) the demonstrated ability of the
14 recipient to conduct and support multi-
15 disciplinary, collaborative research, devel-
16 opment, demonstration, standardized de-
17 sign development, and commercial applica-
18 tion of innovative materials;

19 (iv) the demonstrated research, tech-
20 nology transfer, and education resources
21 available to the recipient to carry out this
22 section;

23 (v) the ability of the recipient to pro-
24 vide leadership in solving immediate and
25 long-range national and regional transpor-

1 tation problems related to innovative mate-
2 rials;

3 (vi) the demonstrated ability of the re-
4 cipient to disseminate results and spur the
5 implementation of transportation research
6 and education programs through national
7 or statewide continuing education pro-
8 grams;

9 (vii) the demonstrated commitment of
10 the recipient to the use of peer review prin-
11 ciples and other research best practices in
12 the selection, management, and dissemina-
13 tion of research projects;

14 (viii) the performance metrics to be
15 used in assessing the performance of the
16 recipient in meeting the stated research,
17 technology transfer, education, and out-
18 reach goals; and

19 (ix) the ability of the recipient to im-
20 plement the proposed program in a cost-ef-
21 ficient manner, including through cost
22 sharing and overall reduced overhead, fa-
23 cilities, and administrative costs.

24 (4) TRANSPARENCY.—

1 (A) IN GENERAL.—The Secretary shall
2 provide to each applicant, on request, any mate-
3 rials, including copies of reviews (with any in-
4 formation that would identify a reviewer re-
5 dacted), used in the evaluation process of the
6 proposal of the applicant.

7 (B) REPORTS.—The Secretary shall sub-
8 mit to the Committee on Transportation and
9 Infrastructure of the House of Representatives
10 and the Committee on Environment and Public
11 Works of the Senate a report that describes the
12 overall review process under paragraph (2),
13 given the considerations under paragraph
14 (3)(B), that includes—

15 (i) specific criteria of evaluation used
16 in the review;
17 (ii) descriptions of the review process;
18 and
19 (iii) explanations of the selected
20 awards.

21 (d) AUTHORIZATION OF APPROPRIATIONS.—

22 (1) IN GENERAL.—There are authorized to be
23 appropriated to carry out this section such sums as
24 are necessary.

1 (2) AVAILABILITY.—Amounts made available to
2 carry out this section shall remain available for a pe-
3 riod of 3 years after the last day of the fiscal year
4 in which the amounts were made available.

5 (e) HUB OPERATIONS.—

6 (1) IN GENERAL.—Each Hub shall conduct, or
7 provide for, multidisciplinary, collaborative research,
8 development, demonstration, and commercial appli-
9 cation of innovative materials.

10 (2) ACTIVITIES.—Each Hub shall—

11 (A) encourage collaboration and commu-
12 nication among the member qualifying entities
13 of the consortium, as described in subsection
14 (c)(1), and awardees;

15 (B) develop and publish proposed plans
16 and programs on a publicly accessible website;

17 (C) submit to the Department of Trans-
18 portation an annual report summarizing the ac-
19 tivities of the Hub, including information—

20 (i) detailing organizational expendi-
21 tures; and

22 (ii) describing each project under-
23 taken by the Hub, as it relates to con-
24 ducting and supporting multidisciplinary,
25 collaborative research, development, dem-

1 onstration, standardized design develop-
2 ment, and commercial application of inno-
3 vative materials; and

4 (D) monitor project implementation and
5 coordination.

6 (3) CONFLICTS OF INTEREST.—Each Hub shall
7 maintain conflict of interest procedures, consistent
8 with the conflict of interest procedures of the De-
9 partment of Transportation.

10 (4) PROHIBITION ON CONSTRUCTION AND REN-
11 OVATION.—

12 (A) IN GENERAL.—No funds provided
13 under this section may be used for construction
14 or renovation of new buildings, test beds, or ad-
15 ditional facilities for Hubs.

16 (B) NON-FEDERAL SHARE.—Construction
17 of new buildings or facilities shall not be consid-
18 ered as part of the non-Federal share of a Hub
19 cost-sharing agreement.

20 (f) APPLICABILITY.—The Secretary shall administer
21 this section in accordance with section 330 of title 49,
22 United States Code.

23 **SEC. 5. TURNER-FAIRBANK HIGHWAY RESEARCH CENTER.**

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

1 “(C) INNOVATIVE MATERIALS.—

2 “(i) DEFINITION OF INNOVATIVE MA-
3 TERIAL.—In this subparagraph, the term
4 ‘innovative material’, with respect to an in-
5 frastructure project, includes high perform-
6 ance asphalt mixtures and concrete formu-
7 lations, geosynthetic materials, advanced
8 insulating materials, advanced alloys and
9 metals, reinforced polymer composites, ad-
10 vanced polymers, nanocellulose and wood-
11 based composites, coatings, highly func-
12 tional adhesives, or other corrosion preven-
13 tion methods used in conjunction with
14 those materials, and any other material or
15 aggregate materials, as determined by the
16 appropriate agency or department head.

17 “(ii) COLLABORATION WITH STATES
18 AND TRIBES.—The Secretary shall expand
19 the capacity of the Turner-Fairbank High-
20 way Research Center to collaborate with
21 relevant State and Tribal agencies—

22 “(I) with respect to the use of in-
23 novative materials in construction
24 projects carried out by the State and
25 Tribal agencies; and

1 “(II) to understand and iden-
2 tify—

3 “(aa) the needs of the State
4 and Tribal agencies; and

5 “(bb) innovative materials
6 that may be further researched,
7 developed, and used to meet
8 those needs.

9 “(iii) ACTIVITIES.—The collaboration
10 described in clause (ii) may include—

11 “(I) the development of new
12 training for State and Tribal agencies;
13 and

14 “(II) the expansion of technical
15 training that involves State or Tribal
16 departments of transportation in the
17 development of new construction de-
18 signs for innovative materials at the
19 Turner-Fairbank Highway Research
20 Center.

21 “(iv) PRIORITY RESEARCH.—The Tur-
22 ner-Fairbank Highway Research Center
23 shall prioritize research relating to—

24 “(I) the use of innovative mate-
25 rials in—

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

3 “(bb) highway reconstruc-
4 tion and rehabilitation; and

5 “(cc) rural road infrastruc-
6 ture;

7 “(II) the development of stand-
8 ardized designs using innovative mate-
9 rials; and

10 “(III) coastal resiliency.

11 “(v) AUTHORIZATION OF APPROPRIA-
12 TIONS.—There is authorized to be appro-
13 priated to carry out this subparagraph
14 \$8,000,000 for each of fiscal years 2024
15 through 2028.”.

16 **SEC. 6. INNOVATIVE BRIDGE PROGRAM.**

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

20 (b) ESTABLISHMENT.—The Administrator shall es-
21 tablish a grant program, to be known as the “Innovative
22 Bridge Program”, to provide grants to State departments
23 of transportation, Tribal governments, public toll authori-
24 ties, and units of local government for—

1 (1) coastal or rural infrastructure bridge
2 projects; and

3 (2) value engineering projects under subsection
4 (g).

5 (c) APPLICATIONS.—To be eligible to receive a grant
6 under subsection (b), a State department of transpor-
7 tation, a unit of Tribal government, a public toll authority,
8 or a unit of local government shall submit to the Adminis-
9 trator an application at such time, in such manner, and
10 containing such information as the Administrator may re-
11 quire.

12 (d) ELIGIBLE PROJECTS.—To be eligible to receive
13 a grant under this section, a coastal or rural infrastruc-
14 ture bridge project or a value engineering project shall—

15 (1) be a project to add multimodal transpor-
16 tation components, such as bicycle and pedestrian
17 paths, to an existing single span suspension bridge
18 that—

19 (A) has a main span length of greater than
20 1500 feet; and

21 (B) is more than 50 years old;

22 (2) be carried out in a manner so as to reduce
23 traffic impact; and

24 (3) use innovative materials that—

25 (A) are resistant to corrosion; and

1 (B) extend the service life of the bridge.

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

5 (1) use materials that are domestically pro-
6 duced and sourced;

7 (2) use nontraditional production techniques,
8 such as factory prefabrication;

9 (3) graft multimodal transportation components
10 to the existing bridge in such a way as to maintain
11 secure spatial separation for bicyclists and pedes-
12 trians from vehicular traffic; and

13 (4) retrofit a bridge.

14 (f) SPECIAL CONSIDERATION FOR AT-RISK AREAS.—
15 In providing grants under this section, the Administrator
16 shall give special consideration to projects located in rural
17 areas or areas prone to coastal or inland flooding due to
18 severe storms (such as hurricanes or rain bursts), storm
19 surges, or projected sea level rise during the projected life-
20 time of the project.

21 (g) VALUE ENGINEERING USING INNOVATIVE MATE-
22 RIALS.—Of the amounts made available to carry out this
23 section, the Administrator shall set aside \$10,000,000 for
24 each of fiscal years 2024 through 2028 to provide funding
25 to 1 or more State departments of transportation or units

1 of Tribal or local government that submit to the Adminis-
2 trator an application to carry out value engineering of a
3 standard bridge design to enhance the performance of the
4 bridge (including extending the service life of the bridge,
5 increasing resistance to corrosion, and reducing construc-
6 tion and preservation costs) through the use of innovative
7 materials.

8 (h) RECORDKEEPING; REPORTS.—

9 (1) RECORDKEEPING.—Not later than 1 year
10 after the date of enactment of this Act, the Adminis-
11 trator shall develop a project recordkeeping system
12 that maintains comprehensive, current, and accurate
13 information on each grant provided under this sec-
14 tion.

15 (2) REPORTS.—Not later than 2 years after the
16 development of the recordkeeping system described
17 in paragraph (1), and every 2 years thereafter, the
18 Administrator shall submit to the Committee on
19 Transportation and Infrastructure of the House of
20 Representatives and the Committee on Environment
21 and Public Works of the Senate, and make publicly
22 available, a report that describes, with respect to
23 each project that receives a grant under this sec-
24 tion—

25 (A) the status of the project;

1 (B) the location of the project;

2 (C) for each bridge involved in the project,
3 the inventory number of the bridge in the Na-
4 tional Bridge Inventory pursuant to section 144
5 of title 23, United States Code;

6 (D) a detailed description of the scope of
7 the project;

8 (E) the amount of project costs paid by
9 funds provided under this section and the total
10 project costs;

11 (F) for each bridge involved in the project,
12 the bridge condition, operations, and perform-
13 ance of the bridge; and

14 (G) in every third report submitted under
15 this paragraph, the results of the regular moni-
16 toring and evaluation of the maintenance de-
17 mands, projects, needs, and costs of each bridge
18 in the project during the previous 6 years.

19 (i) **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 2024 through 2028.

23 **SEC. 7. WATER INFRASTRUCTURE INNOVATION PROGRAM.**

24 (a) **ESTABLISHMENT.**—The Administrator of the En-
25 vironmental Protection Agency (referred to in this section

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

10 (b) APPLICATIONS.—To be eligible to receive a grant
11 under this section, an applicant shall submit to the Admin-
12 istrator an application at such time, in such manner, and
13 containing such information as the Administrator may re-
14 quire.

15 (c) ELIGIBLE PROJECTS.—To be eligible to receive
16 a grant under this section, a water infrastructure project
17 shall—

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

20 (2) use innovative materials that—

21 (A) are resistant to degradation;

22 (B) extend service life; or

23 (C) provide long-term protection of water
24 facilities and systems.

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

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

12 (f) RECORDKEEPING; REPORTS.—

13 (1) RECORDKEEPING.—Not later than 1 year
14 after the date of enactment of this Act, the Adminis-
15 trator shall develop a project recordkeeping system
16 that maintains comprehensive, current, and accurate
17 information on each grant provided under this sec-
18 tion.

19 (2) REPORTS.—Not later than 2 years after the
20 development of the recordkeeping system described
21 in paragraph (1), and every 2 years thereafter, the
22 Administrator shall submit to the appropriate com-
23 mittees of Congress, including the Committee on
24 Environment and Public Works of the Senate, and
25 make publicly available a report describing, with re-

1 spect to each project that receives a grant under this
2 section—

3 (A) the status of the project;

4 (B) the location of the project;

5 (C) a detailed description of the scope of
6 the project;

7 (D) the amount of project costs paid by
8 funds provided under this section and the total
9 project costs;

10 (E) the condition, operations, and perform-
11 ance of the project; and

12 (F) in every third report submitted under
13 this paragraph, the results of the regular moni-
14 toring and evaluation of the maintenance de-
15 mands, projects, needs, and costs of the project
16 during the previous 6 years.

17 (g) AUTHORIZATION OF APPROPRIATIONS.—There is
18 authorized to be appropriated to the Administrator to
19 carry out this section \$65,000,000 for each of fiscal years
20 2024 through 2028.

21 **SEC. 8. INNOVATIVE PROJECT DELIVERY FEDERAL SHARE.**

22 (a) IN GENERAL.—Section 120(c)(3)(B) of title 23,
23 United States Code, is amended—

24 (1) by striking clauses (i) and (ii) and inserting
25 the following:

1 “(i) prefabricated bridge elements and
2 systems, innovative materials, and other
3 technologies to reduce bridge construction
4 time, extend service life, and reduce preser-
5 vation costs, as compared to conventionally
6 designed and constructed bridges;

7 “(ii) innovative construction equip-
8 ment, materials, techniques, or practices,
9 including the use of in-place recycling tech-
10 nology, digital 3-dimensional modeling
11 technologies, and advanced digital con-
12 struction management systems;”;

13 (2) in clause (vi), by striking “or” at the end;

14 (3) by redesignating clause (vii) as clause (viii);

15 and

16 (4) by inserting after clause (vi) the following:

17 “(vii) innovative pavement materials
18 that demonstrate reductions in greenhouse
19 gas emissions through sequestration or in-
20 novative manufacturing processes; or”.

21 (b) **TECHNICAL AMENDMENT.**—Section 107(a)(2) of
22 title 23, United States Code, is amended by striking “sub-
23 section (c) of”.