

Union Calendar No. 593

118TH CONGRESS
2D SESSION

H. R. 7073

[Report No. 118-699]

To improve public-private partnerships and increase Federal research, development, and demonstration related to the evolution of next generation pipeline systems, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

JANUARY 22, 2024

Mr. WEBER of Texas (for himself, Ms. CARAVEO, Mr. LUCAS, and Mr. OBERNOLTE) introduced the following bill; which was referred to the Committee on Science, Space, and Technology

SEPTEMBER 20, 2024

Additional sponsor: Mr. WILLIAMS of New York

SEPTEMBER 20, 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 italic]

[For text of introduced bill, see copy of bill as introduced on January 22, 2024]

A BILL

To improve public-private partnerships and increase Federal research, development, and demonstration related to the evolution of next generation pipeline systems, 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 “Next Generation Pipe-*
5 *lines Research and Development Act”.*

6 **SEC. 2. DEFINITIONS.**

7 *In this Act:*

8 (1) *DEPARTMENT.—The term “Department”*
9 *means the Department of Energy.*

10 (2) *ELIGIBLE ENTITY.—The term “eligible enti-*
11 *ty” means—*

12 (A) *an institution of higher education (as*
13 *such term is defined in section 101(a) of the*
14 *Higher Education Act of 1965 (20 U.S.C.*
15 *1001(a))), including historically Black colleges*
16 *and universities (within the meaning of the term*
17 *“part B institution” in section 322 of the Higher*
18 *Education Act of 1965 (20 U.S.C. 1061)), Tribal*
19 *colleges and universities (as such term is defined*
20 *in section 316 of the Higher Education Act of*
21 *1965 (20 U.S.C. 1059c)), and minority serving*
22 *institutions (including the entities described in*
23 *any of paragraphs (1) through (7) of section*
24 *371(a) of the Higher Education Act of 1965 (20*
25 *U.S.C. 1067q(a)));*

- 1 (B) a nonprofit research organization;
- 2 (C) a National Laboratory (as such term is
- 3 defined in section 2 of the Energy Policy Act of
- 4 2005 (42 U.S.C. 15801));
- 5 (D) a private commercial entity;
- 6 (E) a partnership or consortium of two or
- 7 more entities described in subparagraphs (A)
- 8 through (D) that leverages existing Department
- 9 efforts; or
- 10 (F) any other entity the Secretary deter-
- 11 mines appropriate.

12 (3) SECRETARY.—The term “Secretary” means

13 the Secretary of Energy.

14 (4) TECHNICAL STANDARDS.—The term “tech-

15 nical standard” has the meaning given such term in

16 section 12(d)(5) of the National Technology Transfer

17 and Advancement Act of 1995 (15 U.S.C. 272 note).

18 **SEC. 3. COORDINATION.**

19 In carrying out this Act—

20 (1) the Secretary shall avoid unnecessary dupli-

21 cation and achieve shared mission goals by coordi-

22 nating with the Administrator of the Pipeline and

23 Hazardous Materials Safety Administration of the

24 Department of Transportation and across all relevant

1 *program offices at the Department of Energy, includ-*
2 *ing—*

3 *(A) the Office of Science;*
4 *(B) the Office of Fossil Energy and Carbon*
5 *Management;*

6 *(C) the Office of Energy Efficiency and Re-*
7 *newable Energy;*

8 *(D) the Office of Cybersecurity, Energy Se-*
9 *curity, and Emergency Response;*

10 *(E) the Advanced Research Projects Agen-*
11 *cy-Energy;*

12 *(F) the Office of Clean Energy Demonstra-*
13 *tions; and*

14 *(G) any other cross-cutting program office*
15 *determined appropriate;*

16 *(2) the Secretary of Transportation shall ensure*
17 *participation of and coordination with the Secretary*
18 *of Energy of—*

19 *(A) the Pipeline and Hazardous Materials*
20 *Safety Administration of the Department of*
21 *Transportation; and*

22 *(B) any other program office of the Depart-*
23 *ment of Transportation determined appropriate;*
24 *and*

1 (3) the Secretary shall coordinate with the Director of the National Institute of Standards and Technology, the Secretary of the Interior, and the heads of other relevant Federal agencies, as appropriate.

5 **SEC. 4. ADVANCED PIPELINE MATERIALS AND TECHNOLOGIES DEMONSTRATION INITIATIVE.**

7 (a) *IN GENERAL.*—Subtitle E of title III of division
8 D of the Infrastructure Investment and Jobs Act (Public
9 Law 117–58) is amended by adding at the end the following
10 new section:

11 **“SEC. 40344. ADVANCED PIPELINE MATERIALS AND TECHNOLOGIES DEMONSTRATION INITIATIVE.**

13 “(a) *ESTABLISHMENT OF INITIATIVE.*—The Secretary
14 shall establish a demonstration initiative (in this section
15 referred to as the ‘Initiative’) under which the Secretary,
16 through a competitive merit review process, shall award fi-
17 nancial assistance to eligible entities to carry out dem-
18 onstration projects on low- to mid-technology readiness level
19 subjects to achieve deployment of technologies that—

20 “(1) are applicable to pipelines and associated
21 infrastructure, including liquefied natural gas facilities and underground and above ground gas and liq-
22 uid fuel storage facilities; and

1 “(2) involve the development of next generation
2 pipeline systems, components, and related tech-
3 nologies.

4 “(b) *DEMONSTRATION PROJECT FOCUS AREAS.*—In
5 carrying out the Initiative, the Secretary shall select dem-
6 onstration projects that best advance research undertaken
7 by the Department and the Department of Transportation
8 and incorporate a range of technology focus areas, which
9 may include the following:

10 “(1) Advanced leak detection and mitigation
11 tools and technologies.

12 “(2) Novel materials, including alloy and non-
13 metallic materials, to improve integrity for new and
14 existing pipelines, such as pipeline coatings, sleeves,
15 and liners, and corrosion resistant materials, includ-
16 ing maximum and minimum flow rates and immu-
17 nity to electrical discharge processes.

18 “(3) Technologies and methods for retrofitting
19 existing pipelines, resolving material compatibility
20 issues, and minimizing leakage, such as field protec-
21 tive coatings and material treatment.

22 “(4) Advanced manufacturing approaches for
23 producing, fitting, and coupling pipelines, including
24 the fabrication of higher performance pipeline mate-
25 rials and new extrusion technologies or methods to

1 *join ultra-high strength and corrosion resistant mate-*
2 *rials at a scale for distribution.*

3 “(5) Advanced sensor technologies and processes
4 that enable real-time or *in situ* monitoring of pipeline
5 assets to assess and mitigate leaks, both internal and
6 external to the pipeline, which may include the fol-
7 lowing:

8 “(A) Wireless sensors, such as surface acous-
9 tic wave sensors.

10 “(B) Advanced and cost-effective electro-
11 chemical sensors.

12 “(C) Distributed fiber optic sensors.

13 “(D) Autonomous sensor systems, including
14 uncrewed aircraft.

15 “(E) Optical methods.

16 “(F) Multi-use platforms for diverse sources.

17 “(G) Hybrid data-analysis platforms.

18 “(6) Advanced computational, data analytics,
19 and machine learning models to achieve the following:

20 “(A) Multiscale modeling, characterization,
21 and optimization of transmission and distribu-
22 tion systems and components to aid in planning
23 for optimized and resilient infrastructure.

24 “(B) Correlation between sensor and emis-
25 sions data at all operational points and across

1 *a variety of scales to assure system integrity*
2 *spanning large areas.*

3 “(C) Accurate material lifecycle predictions
4 and simulation platforms to forecast pipeline
5 health.

6 “(D) Secure real time autonomous moni-
7 toring and repair capabilities.

8 “(E) Mapping and monitoring of structural
9 health parameters, such as corrosion.

10 “(7) Self-healing and self-repair functionalities,
11 including by chemical treatment methods.

12 “(8) Autonomous robotic and patch technologies
13 for inspection and repair.

14 “(9) Dynamic compressor technologies, including
15 retrofit kits for existing compressor systems.

16 “(10) Strategies and technologies for integrated
17 cybersecurity considerations and countering
18 cyberattacks.

19 “(11) Technologies and methods to reduce poten-
20 tial environmental impacts, including at the atmos-
21 pheric and subsurface level, associated with pipelines,
22 liquefied natural gas facilities, and gas and liquid
23 fuel storage facilities, such as equipment failure.

24 “(12) Tools to evaluate geographical pipeline
25 data for the feasibility of repurposing existing infra-

1 *structure for safe and effective transport and use of*
2 *alternative fuels, blends, and carbon dioxide.*

3 “(13) Tools and technologies applicable to im-
4 *proving the safety, operation, and efficiency of lique-*
5 *fied natural gas facilities and gas and liquid fuel*
6 *storage facilities.*

7 “(c) *SELECTION REQUIREMENTS.*—In selecting eligible
8 *entities for demonstration projects under the Initiative, the*
9 *Secretary shall, to the maximum extent practicable, take*
10 *the following actions:*

11 “(1) Encourage regional diversity among eligible
12 *entities, including participation by such entities lo-*
13 *cated in rural States.*

14 “(2) Prioritize technological diversity among eli-
15 *gible entities.*

16 “(3) Prioritize a diverse mix of energy, sub-
17 *stances, fuel sources, and byproducts, including the*
18 *following:*

19 “(A) Gas and liquid hydrocarbons, includ-
20 *ing natural gas, renewable natural gas, methane,*
21 *ethane, and liquefied natural gas.*

22 “(B) Carbon dioxide.

23 “(C) Hydrogen.

24 “(D) Biofuels.

25 “(E) Water.

1 “(F) Substances in the hydrogen supply
2 chain, including ammonia and liquid organic
3 hydrogen carriers.

4 “(G) Blends of gases or liquids, including
5 hydrogen blends.

6 “(H) Any other source the Secretary deter-
7 mines appropriate.

8 “(4) Prioritize projects that leverage and are
9 complementary to existing energy infrastructure.

10 “(5) Prioritize projects that leverage matching
11 funds from non-Federal sources.

12 “(6) Ensure that selected projects are coordinated
13 with or expand on the existing technology demonstra-
14 tion programs of the Department.

15 “(7) Evaluate projects and topics for technical
16 performance and economic feasibility as part of
17 lifecycle assessments for return on investment impact.

18 “(8) Prioritize projects that can quantifiably re-
19 duce the environmental impacts of pipelines and asso-
20 ciated infrastructure on air, water, or soil quality in
21 all regions of the United States, especially in under-
22 served and rural communities.

23 “(d) LOCATION.—To the maximum extent practicable,
24 demonstration projects under the Initiative shall be located
25 on sites with existing research infrastructure or with the

1 ability to coordinate with existing Department user facil-
2 ties and research centers.

3 “(e) AUTHORIZATION OF APPROPRIATIONS.—Out of
4 funds authorized to be appropriated for—

5 “(1) the Office of Energy Efficiency and Renew-
6 able Energy, and

7 “(2) the Office of Fossil Energy and Carbon
8 Management,

9 pursuant to paragraphs (1) and (6), respectively, of section
10 10771 of subtitle O of title VI of the Research and Develop-
11 ment, Competition, and Innovation Act (enacted as divi-
12 sion B of Public Law 117–167), there is authorized to be
13 appropriated to the Secretary of Energy to carry out this
14 section \$45,000,000 for fiscal year 2025, and \$50,000,000
15 for each of fiscal years 2026 through 2029.

16 “(f) SUNSET.—This section shall terminate five years
17 after the date of the enactment of this section.”.

18 (b) CLERICAL AMENDMENT.—The table of contents in
19 section 1(b) of the Infrastructure Investment and Jobs Act
20 is amended by inserting after the item relating to section
21 40343 the following new item:

“Sec. 40344. Advanced pipeline materials and technologies demonstration initia-
tive.”.

22 **SEC. 5. JOINT RESEARCH AND DEVELOPMENT PROGRAM.**

23 (a) IN GENERAL.—Subject to the availability of appro-
24 priations, the Secretary, in consultation with the Secretary

1 *of Transportation and the Director of the National Institute*
2 *of Standards and Technology, and in coordination with the*
3 *demonstration initiative established pursuant to section*
4 *40344 of the Infrastructure Investment and Jobs Act (Pub-*
5 *lic Law 117–58), as added by section 4, shall establish with-*
6 *in the Department a joint research and development pro-*
7 *gram (referred to in this Act as the “Joint Program”) to*
8 *carry out research projects that—*

9 (1) *develop cost-effective advanced materials and*
10 *technologies for pipeline transportation systems at*
11 *different scales;*

12 (2) *enable the commercialization of innovative*
13 *materials and technologies for pipeline transportation*
14 *systems;*

15 (3) *support the development of technical stand-*
16 *ards of innovative materials and technologies for*
17 *pipeline transportation systems; and*

18 (4) *are at a low technology readiness level and*
19 *not pursued by the Pipeline Safety Research Program*
20 *of the Pipeline and Hazardous Materials Safety Ad-*
21 *ministration of the Department of Transportation.*

22 (b) *MEMORANDUM OF UNDERSTANDING.—Not later*
23 *than one year after the date of the enactment of this Act,*
24 *the Secretary shall enter into or update an existing memo-*
25 *randum of understanding with the Secretary of Transpor-*

1 tation and the Director of the National Institute of Stand-
2 ards and Technology to administer the Joint Program.
3 Such memorandum shall require each participating agency
4 to—

5 (1) identify unique research capabilities to con-
6 tribute while avoiding duplication of existing efforts;
7 and

8 (2) include cost sharing and cost reimbursement
9 abilities among participating agencies, including any
10 training or resource outlays that will be required.

11 (c) INFRASTRUCTURE.—In carrying out the Joint Pro-
12 gram, the Secretary, the Secretary of Transportation, and
13 the Director of the National Institute of Standards and
14 Technology shall—

15 (1) use existing research infrastructure at—

16 (A) Department of Energy facilities, includ-
17 ing National Laboratories;

18 (B) Department of Transportation initia-
19 tives, including any such initiatives carried out
20 through the Pipeline and Hazardous Materials
21 Safety Administration; and

22 (C) the National Institute of Standards and
23 Technology; and

24 (2) develop new infrastructure for potential
25 projects, if appropriate.

1 (d) *GOALS AND METRICS.*—The Secretary, the Sec-
2 retary of Transportation, and the Director of the National
3 Institute of Standards and Technology shall develop goals
4 and metrics for each agency in meeting technological
5 progress under the Joint Program, consistent with existing
6 United States energy safety, resilience, and security poli-
7 cies.

8 (e) *SELECTION OF PROJECTS.*—To the maximum ex-
9 tent practicable, the Secretary, the Secretary of Transpor-
10 tation, and the Director of the National Institute of Stand-
11 ards and Technology shall ensure the following with respect
12 to the Joint Program:

13 (1) Projects are carried out under conditions
14 that represent a variety of geographies, physical con-
15 ditions, and market constraints.

16 (2) Projects represent an appropriate balance of
17 the following:

18 (A) Larger, higher-cost projects.

19 (B) Smaller, lower-cost projects.

20 (3) To the maximum extent practicable, projects
21 are transferred between participating agencies based
22 on the stage of research and capabilities of each agen-
23 cy.

24 (f) *PRIORITY.*—In carrying out the Joint Program, the
25 Secretary, the Director of the National Institute of Stand-

1 ards and Technology, and the Secretary of Transportation
2 shall, through consultation with the demonstration initia-
3 tive established pursuant to section 40344 of the Infrastruc-
4 ture Investment and Jobs Act (Public Law 117–58), as
5 added by section 4, to identify and advance areas of re-
6 search most needed for demonstration projects under such
7 demonstration initiative, give priority to research and dem-
8 onstration projects that—

9 (1) are likely to be of value to such demonstra-
10 tion initiative; and

11 (2) are done in coordination with, or advance
12 knowledge critical to, the National Pipeline Mod-
13 ernization Center established pursuant to section 6.

14 (g) *RELATION TO EXISTING LAW.*—Nothing in this
15 section may be construed to change existing agency roles,
16 responsibilities, or areas of expertise as described in section
17 12 of the Pipeline Safety Improvement Act of 2002 (Public
18 Law 107–355; 49 U.S.C. 60101 note)

19 (h) *SUNSET.*—This section shall terminate five years
20 after the date of the enactment of this section.

21 **SEC. 6. NATIONAL PIPELINE MODERNIZATION CENTER.**

22 (a) *IN GENERAL.*—In carrying out the demonstration
23 initiative established pursuant to section 40344 of the In-
24 frastructure Investment and Jobs Act (Public Law 117–58),
25 as added by section 4, and the Joint Program and subject

1 *to the availability of appropriations, the Secretary shall es-*
2 *tablish a National Pipeline Modernization Center (referred*
3 *to in this Act as the “Center”), which shall focus on collabora-*
4 *rating with industry and stakeholders to coordinate and*
5 *carry out research, development, and demonstration*
6 *projects focused on commercializing cost-effective products*
7 *and procedures aligned with the goals and priorities set*
8 *forth by the Department.*

9 (b) *SELECTION.—The Secretary shall administer the*
10 *Center in conjunction with an eligible entity pursuant to*
11 *an agreement between the Department and such entity.*
12 *Such entity shall be selected on a competitive, merit-re-*
13 *viewed basis.*

14 (c) *EXISTING CENTERS.—In administering the Center,*
15 *the Secretary shall prioritize higher education energy-re-*
16 *lated research centers in existence as of the date of the enact-*
17 *ment of this Act.*

18 (d) *PERIOD OF PERFORMANCE.—An agreement under*
19 *subsection (b) shall be for a period of not more than five*
20 *years, subject to the availability of appropriations.*

21 (e) *LOCATION.—The Center shall be located in prox-*
22 *imity to critical transportation infrastructure connecting*
23 *to an existing national pipeline transportation system and*
24 *other Department monitoring assets, as determined by the*
25 *Secretary.*

1 (f) COORDINATION WITH TRAINING AND QUALIFICA-
2 TIONS CENTER.—In carrying out the functions described in
3 subsection (a), the Center shall coordinate and collaborate
4 with training centers of the Pipeline and Hazardous Mate-
5 rials Safety Administration of the Department of Transpor-
6 tation to facilitate knowledge sharing among, and enhanced
7 training opportunities for, Federal and State pipeline safe-
8 ty inspectors and investigators.

9 (g) DUPLICATION.—The Secretary shall ensure the co-
10 ordination of, and avoid unnecessary duplication of, the ac-
11 tivities under this section with the National Center of Excel-
12 lence for Liquefied Natural Gas Safety established pursuant
13 to section 111 of the Protecting our Infrastructure of Pipe-
14 lines and Enhancing Safety Act of 2020 (49 U.S.C. 60103
15 note; Public Law 116–260, div. R, title I).

16 **SEC. 7. NIST PIPELINE METROLOGY.**

17 (a) IN GENERAL.—Subject to the availability of appro-
18 priations, the Director of the National Institute of Stand-
19 ards and Technology shall carry out a program of measure-
20 ment research, development, demonstration, and standard-
21 ization to—

22 (1) ensure the integrity of pipeline facilities; and
23 (2) support pipeline safety, security, efficiency,
24 sustainability, and resilience.

1 (b) *TESTING.—The Director of the National Institute*
2 *of Standards and Technology, in collaboration with the Sec-*
3 *retary of the Department of Transportation and in con-*
4 *sultation with the private sector and international stand-*
5 *ards organizations, shall support testing, evaluation, and*
6 *research infrastructure to support the activities described*
7 *in subsection (a).*

8 (c) *ALLOCATION OF APPROPRIATIONS.—From*
9 *amounts appropriated or otherwise made available for the*
10 *National Institute of Standards and Technology, the Direc-*
11 *tor of the National Institute of Standards and Technology*
12 *shall allocate up to \$2,500,000 for each of fiscal years 2025*
13 *through 2029 to carry out this section.*

14 **SEC. 8. AUTHORIZATION OF APPROPRIATIONS.**

15 (a) *IN GENERAL.—Out of funds authorized to be ap-*
16 *propriated for the Office of Energy Efficiency and Renew-*
17 *able Energy and the Office of Fossil Energy and Carbon*
18 *Management pursuant to paragraphs (1) and (6), respec-*
19 *tively, of section 10771 of subtitle O of title VI of the Re-*
20 *search and Development, Competition, and Innovation Act*
21 *(enacted as division B of Public Law 117–167), there is*
22 *authorized to be appropriated to the Secretary to carry*
23 *out—*

1 (1) section 5, \$20,000,000 for fiscal year 2025,
2 and \$30,000,000 for each of fiscal years 2026 through
3 2029; and

4 (2) section 6, \$10,000,000 for fiscal year 2025,
5 and \$15,000,000 for each of fiscal years 2026 through
6 2029.

7 (b) *OFFSET*.—Section 10771 of subtitle O of title VI
8 of the Research and Development, Competition, and Inno-
9 vation Act (enacted as division B of Public Law 117–167)

10 is amended—

11 (1) in paragraph (1)—

12 (A) in the matter preceding subparagraph
13 (A), by striking “2026” and inserting “2029”;
14 and

15 (B) in subparagraph (B), by striking
16 “1,200,000,000” and inserting “\$1,100,000,000”;
17 and

18 (2) in subsection (6)—

19 (A) in the matter preceding subparagraph
20 (A), by striking “2026” and inserting “2029”;

21 (B) in subparagraph (A), by striking
22 “600,000,000” and inserting “\$445,000,000”;

23 (C) in subparagraph (B)—

24 (i) by striking “200,000,000” and in-
25 serting “\$100,000,000”; and

- 1 (ii) by striking “and” after the semi-
- 2 colon;
- 3 (D) in subparagraph (C)—
- 4 (i) by striking “1,000,000,000” and in-
- 5 serting “\$900,000,000”; and
- 6 (ii) by striking the period and insert-
- 7 ing “; and”; and
- 8 (E) by adding at the end the following new
- 9 subparagraph:
- 10 “(D) \$455,000,000 to carry out pipeline re-
- 11 search, development, demonstration, and com-
- 12 mercial application activities.”.

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118TH CONGRESS
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H. R. 7073

[Report No. 118-699]

A BILL

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SEPTEMBER 20, 2024

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