118TH CONGRESS
2d Session
HOUSE OF REPRESENTATIVES
REPORT
118–699

NEXT GENERATION PIPELINES RESEARCH AND DEVELOPMENT ACT

SEPTEMBER 20, 2024.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

Mr. LUCAS, from the Committee on Science, Space, and Technology, submitted the following

R E P O R T

[To accompany H.R. 7073]

The Committee on Science, Space, and Technology, to whom was referred the bill (H.R. 7073) 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, having considered the same, reports favorably thereon with an amendment and recommends that the bill as amended do pass.

CONTENTS

The amendment is as follows:

Strike all after the enacting clause and insert the following:

SECTION 1. SHORT TITLE.

This Act may be cited as the "Next Generation Pipelines Research and Development Act".

SEC. 2. DEFINITIONS.

In this Act:

(1) DEPARTMENT.—The term "Department" means the Department of Energy.

(2) ELIGIBLE ENTITY.—The term "eligible entity" means—

(A) an institution of higher education (as such term is defined in section 101(a) of the Higher Education Act of 1965 (20 U.S.C. 1001(a))), including historically Black colleges and universities (within the meaning of the term "part B institution" in section 322 of the Higher Education Act of 1965 (20 U.S.C. 1061)), Tribal colleges and universities (as such term is defined in section 316 of the Higher Education Act of 1965 (20 U.S.C. 1059c)), and minority serving institutions (including the entities described in any of paragraphs (1) through (7) of section 371(a) of the Higher Education Act of 1965 (20 U.S.C. 1067q(a)));

(B) a nonprofit research organization;

(C) a National Laboratory (as such term is defined in section 2 of the Energy Policy Act of 2005 (42 U.S.C. 15801));

(D) a private commercial entity;

(E) a partnership or consortium of two or more entities described in subparagraphs (A) through (D) that leverages existing Department efforts; or

(F) any other entity the Secretary determines appropriate.

(3) SECRETARY.—The term "Secretary" means the Secretary of Energy.

(4) TECHNICAL STANDARDS.—The term "technical standard" has the meaning given such term in section 12(d)(5) of the National Technology Transfer and Advancement Act of 1995 (15 U.S.C. 272 note).

SEC. 3. COORDINATION.

In carrying out this Act—

(1) the Secretary shall avoid unnecessary duplication and achieve shared mission goals by coordinating with the Administrator of the Pipeline and Hazardous Materials Safety Administration of the Department of Transportation and across all relevant program offices at the Department of Energy, including—

(A) the Office of Science;

(B) the Office of Fossil Energy and Carbon Management;

(C) the Office of Energy Efficiency and Renewable Energy;

(D) the Office of Cybersecurity, Energy Security, and Emergency Response;

(E) the Advanced Research Projects Agency—Energy;

(F) the Office of Clean Energy Demonstrations; and

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

(2) the Secretary of Transportation shall ensure participation of and coordination with the Secretary of Energy of—

(A) the Pipeline and Hazardous Materials Safety Administration of the Department of Transportation; and

(B) any other program office of the Department of Transportation determined appropriate; and

(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.

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

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

"SEC. 40344. ADVANCED PIPELINE MATERIALS AND TECHNOLOGIES DEMONSTRATION INITIATIVE.

"(a) ESTABLISHMENT OF INITIATIVE.—The Secretary shall establish a demonstration initiative (in this section referred to as the 'Initiative') under which the Secretary, through a competitive merit review process, shall award financial assistance to eligible entities to carry out demonstration projects on low- to mid-technology readiness level subjects to achieve deployment of technologies that—

"(1) are applicable to pipelines and associated infrastructure, including liquefied natural gas facilities and underground and above ground gas and liquid fuel storage facilities; and

"(2) involve the development of next generation pipeline systems, components, and related technologies.

"(b) DEMONSTRATION PROJECT FOCUS AREAS.—In carrying out the Initiative, the Secretary shall select demonstration projects that best advance research undertaken by the Department and the Department of Transportation and incorporate a range of technology focus areas, which may include the following:

"(1) Advanced leak detection and mitigation tools and technologies.

"(2) Novel materials, including alloy and nonmetallic materials, to improve integrity for new and existing pipelines, such as pipeline coatings, sleeves, and liners, and corrosion resistant materials, including maximum and minimum flow rates and immunity to electrical discharge processes.

"(3) Technologies and methods for retrofitting existing pipelines, resolving material compatibility issues, and minimizing leakage, such as field protective coatings and material treatment.

"(4) Advanced manufacturing approaches for producing, fitting, and coupling pipelines, including the fabrication of higher performance pipeline materials and new extrusion technologies or methods to join ultra-high strength and corrosion resistant materials at a scale for distribution.

"(5) Advanced sensor technologies and processes that enable real-time or in situ monitoring of pipeline assets to assess and mitigate leaks, both internal and external to the pipeline, which may include the following:

"(A) Wireless sensors, such as surface acoustic wave sensors.

"(B) Advanced and cost-effective electrochemical sensors.

"(C) Distributed fiber optic sensors.

"(D) Autonomous sensor systems, including uncrewed aircraft.

"(E) Optical methods.

"(F) Multi-use platforms for diverse sources.

"(G) Hybrid data-analysis platforms.

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

"(A) Multiscale modeling, characterization, and optimization of transmission and distribution systems and components to aid in planning for optimized and resilient infrastructure.

"(B) Correlation between sensor and emissions data at all operational points and across a variety of scales to assure system integrity spanning large areas.

"(C) Accurate material lifecycle predictions and simulation platforms to forecast pipeline health.

"(D) Secure real time autonomous monitoring and repair capabilities.

"(E) Mapping and monitoring of structural health parameters, such as corrosion.

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

"(8) Autonomous robotic and patch technologies for inspection and repair.

"(9) Dynamic compressor technologies, including retrofit kits for existing compressor systems.

"(10) Strategies and technologies for integrated cybersecurity considerations and countering cyberattacks.

"(11) Technologies and methods to reduce potential environmental impacts, including at the atmospheric and subsurface level, associated with pipelines, liquefied natural gas facilities, and gas and liquid fuel storage facilities, such as equipment failure.

"(12) Tools to evaluate geographical pipeline data for the feasibility of repurposing existing infrastructure for safe and effective transport and use of alternative fuels, blends, and carbon dioxide.

"(13) Tools and technologies applicable to improving the safety, operation, and efficiency of liquefied natural gas facilities and gas and liquid fuel storage facilities.

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

"(1) Encourage regional diversity among eligible entities, including participation by such entities located in rural States.

"(2) Prioritize technological diversity among eligible entities.

"(3) Prioritize a diverse mix of energy, substances, fuel sources, and byproducts, including the following:

"(A) Gas and liquid hydrocarbons, including natural gas, renewable natural gas, methane, ethane, and liquefied natural gas.

"(B) Carbon dioxide.

"(C) Hydrogen.

"(D) Biofuels.

"(E) Water.

"(F) Substances in the hydrogen supply chain, including ammonia and liquid organic hydrogen carriers.

"(G) Blends of gases or liquids, including hydrogen blends.

"(H) Any other source the Secretary determines appropriate.

"(4) Prioritize projects that leverage and are complementary to existing energy infrastructure.

"(5) Prioritize projects that leverage matching funds from non-Federal sources.

"(6) Ensure that selected projects are coordinated with or expand on the existing technology demonstration programs of the Department.

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

"(8) Prioritize projects that can quantifiably reduce the environmental impacts of pipelines and associated infrastructure on air, water, or soil quality in all regions of the United States, especially in underserved and rural communities.

"(d) LOCATION.—To the maximum extent practicable, demonstration projects under the Initiative shall be located on sites with existing research infrastructure or with the ability to coordinate with existing Department user facilities and research centers.

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

"(1) the Office of Energy Efficiency and Renewable Energy, and

"(2) the Office of Fossil Energy and Carbon Management,

pursuant to paragraphs (1) and (6), respectively, of section 10771 of subtitle O of title VI of the Research and Development, Competition, and Innovation Act (enacted as division B of Public Law 117–167), there is authorized to be appropriated to the Secretary of Energy to carry out this section $45,000,000 for fiscal year 2025, and $50,000,000 for each of fiscal years 2026 through 2029.

"(f) SUNSET.—This section shall terminate five years after the date of the enactment of this section.".

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

"Sec. 40344. Advanced pipeline materials and technologies demonstration initiative.".

SEC. 5. JOINT RESEARCH AND DEVELOPMENT PROGRAM.

(a) IN GENERAL.—Subject to the availability of appropriations, the Secretary, in consultation with the Secretary of Transportation and the Director of the National Institute of Standards and Technology, and in coordination with the demonstration initiative established pursuant to section 40344 of the Infrastructure Investment and Jobs Act (Public Law 117–58), as added by section 4, shall establish within the Department a joint research and development program (referred to in this Act as the "Joint Program") to carry out research projects that—

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

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

(3) support the development of technical standards of innovative materials and technologies for pipeline transportation systems; and

(4) are at a low technology readiness level and not pursued by the Pipeline Safety Research Program of the Pipeline and Hazardous Materials Safety Administration of the Department of Transportation.

(b) MEMORANDUM OF UNDERSTANDING.—Not later than one year after the date of the enactment of this Act, the Secretary shall enter into or update an existing memorandum of understanding with the Secretary of Transportation and the Director of the National Institute of Standards and Technology to administer the Joint Program. Such memorandum shall require each participating agency to—

(1) identify unique research capabilities to contribute while avoiding duplication of existing efforts; and

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

(c) INFRASTRUCTURE.—In carrying out the Joint Program, the Secretary, the Secretary of Transportation, and the Director of the National Institute of Standards and Technology shall—

(1) use existing research infrastructure at—

(A) Department of Energy facilities, including National Laboratories;

(B) Department of Transportation initiatives, including any such initiatives carried out through the Pipeline and Hazardous Materials Safety Administration; and

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

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

(d) GOALS AND METRICS.—The Secretary, the Secretary of Transportation, and the Director of the National Institute of Standards and Technology shall develop goals and metrics for each agency in meeting technological progress under the Joint Program, consistent with existing United States energy safety, resilience, and security policies.

(e) SELECTION OF PROJECTS.—To the maximum extent practicable, the Secretary, the Secretary of Transportation, and the Director of the National Institute of Standards and Technology shall ensure the following with respect to the Joint Program:

(1) Projects are carried out under conditions that represent a variety of geographies, physical conditions, and market constraints.

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

(A) Larger, higher-cost projects.

(B) Smaller, lower-cost projects.

(3) To the maximum extent practicable, projects are transferred between participating agencies based on the stage of research and capabilities of each agency.

(f) PRIORITY.—In carrying out the Joint Program, the Secretary, the Director of the National Institute of Standards and Technology, and the Secretary of Transportation shall, through consultation with the demonstration initiative established pursuant to section 40344 of the Infrastructure Investment and Jobs Act (Public Law 117–58), as added by section 4, to identify and advance areas of research most needed for demonstration projects under such demonstration initiative, give priority to research and demonstration projects that—

(1) are likely to be of value to such demonstration initiative; and

(2) are done in coordination with, or advance knowledge critical to, the National Pipeline Modernization Center established pursuant to section 6.

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

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

SEC. 6. NATIONAL PIPELINE MODERNIZATION CENTER.

(a) IN GENERAL.—In carrying out the demonstration initiative established pursuant to section 40344 of the Infrastructure Investment and Jobs Act (Public Law 117–58), as added by section 4, and the Joint Program and subject to the availability of appropriations, the Secretary shall establish a National Pipeline Modernization Center (referred to in this Act as the "Center"), which shall focus on collaborating with industry and stakeholders to coordinate and carry out research, development, and demonstration projects focused on commercializing cost-effective products and procedures aligned with the goals and priorities set forth by the Department.

(b) SELECTION.—The Secretary shall administer the Center in conjunction with an eligible entity pursuant to an agreement between the Department and such entity. Such entity shall be selected on a competitive, merit-reviewed basis.

(c) EXISTING CENTERS.—In administering the Center, the Secretary shall prioritize higher education energy-related research centers in existence as of the date of the enactment of this Act.

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

(e) LOCATION.—The Center shall be located in proximity to critical transportation infrastructure connecting to an existing national pipeline transportation system and other Department monitoring assets, as determined by the Secretary.

(f) COORDINATION WITH TRAINING AND QUALIFICATIONS CENTER.—In carrying out the functions described in subsection (a), the Center shall coordinate and collaborate with training centers of the Pipeline and Hazardous Materials Safety Administration of the Department of Transportation to facilitate knowledge sharing among, and enhanced training opportunities for, Federal and State pipeline safety inspectors and investigators.

(g) DUPLICATION.—The Secretary shall ensure the coordination of, and avoid unnecessary duplication of, the activities under this section with the National Center of Excellence for Liquefied Natural Gas Safety established pursuant to section 111

of the Protecting our Infrastructure of Pipelines and Enhancing Safety Act of 2020 (49 U.S.C. 60103 note; Public Law 116–260, div. R, title I).

SEC. 7. NIST PIPELINE METROLOGY.

(a) IN GENERAL.—Subject to the availability of appropriations, the Director of the National Institute of Standards and Technology shall carry out a program of measurement research, development, demonstration, and standardization to—

(1) ensure the integrity of pipeline facilities; and

(2) support pipeline safety, security, efficiency, sustainability, and resilience.

(b) TESTING.—The Director of the National Institute of Standards and Technology, in collaboration with the Secretary of the Department of Transportation and in consultation with the private sector and international standards organizations, shall support testing, evaluation, and research infrastructure to support the activities described in subsection (a).

(c) ALLOCATION OF APPROPRIATIONS.—From amounts appropriated or otherwise made available for the National Institute of Standards and Technology, the Director of the National Institute of Standards and Technology shall allocate up to $2,500,000 for each of fiscal years 2025 through 2029 to carry out this section.

SEC. 8. AUTHORIZATION OF APPROPRIATIONS.

(a) IN GENERAL.—Out of funds authorized to be appropriated for the Office of Energy Efficiency and Renewable Energy and the Office of Fossil Energy and Carbon Management pursuant to paragraphs (1) and (6), respectively, of section 10771 of subtitle O of title VI of the Research and Development, Competition, and Innovation Act (enacted as division B of Public Law 117–167), there is authorized to be appropriated to the Secretary to carry out—

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

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

(b) OFFSET.—Section 10771 of subtitle O of title VI of the Research and Development, Competition, and Innovation Act (enacted as division B of Public Law 117–167) is amended—

(1) in paragraph (1)—

(A) in the matter preceding subparagraph (A), by striking "2026" and inserting "2029"; and

(B) in subparagraph (B), by striking "1,200,000,000" and inserting "$1,100,000,000"; and

(2) in subsection (6)—

(A) in the matter preceding subparagraph (A), by striking "2026" and inserting "2029";

(B) in subparagraph (A), by striking "600,000,000" and inserting "$445,000,000";

(C) in subparagraph (B)—

(i) by striking "200,000,000" and inserting "$100,000,000"; and

(ii) by striking "and" after the semicolon;

(D) in subparagraph (C)—

(i) by striking "1,000,000,000" and inserting "$900,000,000"; and

(ii) by striking the period and inserting "; and"; and

(E) by adding at the end the following new subparagraph:

"(D) $455,000,000 to carry out pipeline research, development, demonstration, and commercial application activities.".

PURPOSE AND SUMMARY

H.R. 7073 improves public-private partnerships and increases Federal research, development, and demonstration related activities for next generation pipeline systems and upgrades to current infrastructure. The Next Generation Pipelines Research and Development Act seeks to invigorate the focus on improving pipeline safety and technology through innovation. A new and modern emphasis on federal research and development collaboration, as well as increased industry involvement and public-private demonstration projects, will be required to meet future energy demands and ensure the continued safe and efficient use of pipelines.

This bill establishes a demonstration initiative in which the Secretary of Energy shall stand up projects in the low- to mid-tech-

nology readiness level that best advance research undertaken by Department of Energy (DOE) and the Pipeline and Hazardous Materials Safety Administration (PHMSA). This will help lab-scale, basic research overcome the "valley of death" and achieve commercial deployment.

H.R. 7073 also requires DOE, Department of Transportation, and the National Institute of Standards and Technology to enter into a new Memorandum of Understanding (MOU) to conduct a joint research program. A similar MOU was established in 2004 but has not been updated or codified since.

Additionally, this bill directs DOE to establish a National Pipeline Modernization Center. This Center will be centrally located for industry and stakeholders to collaborate with federal agencies on pipeline research and development and enable them to commercialize new cost-effective products and procedures.

Background and Need for Legislation

The United States' pipeline network consists of nearly 2.8 million miles of pipeline—enough to wrap around the world at the equator more than 112 times. Yet, 50% of the nation's pipeline system is more than sixty years old. With these aging pipelines operating 24 hours a day, 7 days a week, it is inevitable that without new inspection and leak detection technologies, defects and anomalies will occur more frequently. Additionally, new fuel sources such as hydrogen and carbon dioxide will require pipeline transportation to be economically feasible. The Department of Energy estimates that as many as 96,000 miles of new pipelines will be needed to handle carbon dioxide captured from power plants and directly from the air.

Currently, both the Department of Energy and the Department of Transportation's Pipeline and Hazardous Materials Safety Administration conduct research on different elements of pipeline safety and innovation. DOE has traditionally focused on materials, transmission and distribution technologies, real-time sensing and repair, and natural gas conversion processes. PHMSA has expertise in pipe manufacturing and installation quality control, including permitting process, employee training, and inline inspection.

The last detailed policy direction given for federal pipeline research was enacted as part of the Pipeline Safety Improvement Act of 2002.

Legislative History

H.R. 7073 was introduced on January 22, 2024, by Representative Randy Weber (R–TX) and is cosponsored by Science Committee Chairman Frank Lucas (R–OK) and Representatives Caraveo (D–CO), Obernolte (R–CA), and Williams (R–NY).

Section-by-Section

Section 1. Short title

The short title of this legislation is "Next Generation Pipelines Research and Development Act"

Section 2. Definitions

This section provides definitions related to Department, eligible entity, Secretary, and technical standards.

Section 3. Coordination

This section ensures that the activities authorized in this act avoid unnecessary duplication and achieve shared mission goals by coordinating with the Administrator of PHMSA and across all relevant program offices at the Department of Energy, Department of Transportation (DOT), National Institute of Standards and Technology (NIST), and the Department of Interior.

Section 4. Advanced pipeline materials and technologies demonstration initiative

This section establishes a demonstration initiative to award financial assistance, through a competitive merit review process, for projects on a low- to mid-technology readiness level that are applicable to pipelines and associated infrastructure. These projects are to include liquefied natural gas facilities, underground and above ground gas and liquid fuel storage facilities, as well as involve the development of next generation pipeline systems, components, and related technologies.

This section ensures that selected demonstration projects best advance research undertaken by DOE and DOT and incorporate a range of technology focus areas. This section also directs regional and technological diversity among projects, including projects related to a diver mix of energy, substances, fuel sources, and by-products.

Section 5. Joint research and development program

This section requires the Secretary of Energy, in consultation with the Secretary of Transportation and the Director of the National Institute of Standards and Technology, and in coordination with the demonstration initiative established by section 4, to establish a joint research and development program related to cost-effective advanced materials and technologies for pipeline transportation systems.

This section directs DOE, DOT, and NIST to enter into or update an existing memorandum of understanding within one year of enactment. As part of the MOU, each agency is required to identify unique research capabilities to contribute while avoiding duplication of existing efforts and include cost sharing and cost reimbursement abilities among participating agencies.

This section also requires that priority be placed on identifying and advancing areas of research most needed for demonstration projects.

Section 6. National Pipeline Modernization Center

This section directs the establishment of a National Pipeline Modernization Center, which will focus on collaborating with industry and stakeholders to coordinate and carry out research, development, and demonstration projects related to commercializing cost-effective products and procedures aligned with the goals and priorities set forth by the joint R&D program and demonstration initiative.

This section also ensures that the Center is located in proximity to critical transportation infrastructure connecting to an existing national pipeline transportation system and other Department monitoring assets, as well as coordinated with training centers of PHMSA.

Section 7. NIST pipeline metrology

This section directs the National Institute of Standards and Technology to carry out measurement research, development, demonstration, and standardization to ensure the integrity of pipeline facilities and support pipeline safety, security, efficiency, sustainability, and resilience. NIST is authorized to consult with the private sector and international standards organization to support testing, evaluation, and research infrastructure.

Section 8. Authorization of appropriations

This section authorizes the appropriation of $20,000,000 for FY 25, and $30,000,000, for each FY 26–29 for the joint research and development program. This section also authorizes the appropriation of $10,000,000 for FY 25, and $15,000,000 for each FY 26–29 for the National Pipeline Modernization Center.

This section offsets the total authorization of appropriations in this bill by reducing authorization of appropriations in the CHIPS and Science Act.

RELATED COMMITTEE HEARINGS

Pursuant to clause 3(c)(6) of rule XIII, the following hearing was used to develop or consider H.R. 7073.

On July 26, 2023, the Subcommittee on Energy held a hearing entitled *Unearthing Innovation: The Future of Subsurface Science and Technology in the United States*. Members and witnesses discussed the status of U.S. subsurface science and technology research including in the areas of fundamental scientific discovery, clean energy production and storage, waste management strategies, and next generation mining technologies.

Witnesses:

- Dr. Alexandra Hakala, Senior Fellow, Geologic and Environmental Systems, National Energy Technology Laboratory, U.S. Department of Energy.
- Mr. Ben Serrurier, Government Affairs and Policy Manager, Fervo Energy.
- Dr. Kevin M. Rosso, Associate Director, Physical Sciences Division, Pacific Northwest National Laboratory.
- Dr. Haruko Murakami Wainwright, Norman C. Rasmussen Career Development Professor, Assistant Professor of Nuclear Science and Engineering, and Assistant Professor of Civil and Environmental Engineering, Massachusetts Institute of Technology.
- Ms. Allyson Book, Chief Sustainability Officer, Baker Hughes.

On September 14, 2023, the Full Committee held a hearing entitled *An Update on the Department of Energy's Science and Technology Priorities*. Members and the witness discussed DOE's goals and priorities for its civilian research, development, demonstration, and commercial application programs.

Witness:

- The Honorable Jennifer Granholm, Secretary of Energy, U.S. Department of Energy

COMMITTEE CONSIDERATION

On March 20, 2024, the Committee on Science, Space, and Technology met in open session to consider H.R. 7073.

Rep. Lee offered an amendment to prioritize projects that can reduce environmental impacts of pipelines and associated infrastructure. The amendment was adopted by voice vote.

Rep. Weber offered a Manager's Amendment, which made minor technical and conforming changes to the text of the bill. The amendment was adopted by voice vote.

Chairman Lucas moved that the Committee favorably report the bill, H.R. 7073, as amended, to the House of Representatives with the recommendation that the bill be reported favorably. The motion was agreed to by a recorded vote of 36 yeas to 0 nays, a quorum being present.

ROLL CALL VOTES

Clause 3(b) of rule XIII requires the Committee to list the record votes on the motion to report legislation and amendments thereto. The following reflects the record votes taken during the Committee consideration:

House Committee on Science, Space, and Technology
118th Congress
Full Committee Markup

Bill # HR 7073
Motion to report HR 7073 to the House, as amended

Majority	Aye	No	Present
Frank Lucas, Oklahoma	1		
Bill Posey, Florida	1		
Randy Weber, Texas	1		
Brian Babin, Texas	1		
Jim Baird, Indiana	1		
Daniel Webster, Florida	1		
Mike Garcia, California	1		
Stephanie Bice, Oklahoma	1		
Jay Obernolte, California	1		
Chuck Fleischmann, Tennessee	1		
Darrell Issa, California			
Rick Crawford, Arkansas	1		
Claudia Tenney, New York	1		
Ryan Zinke, Montana	1		
Scott Franklin, Florida	1		
Dale Strong, Alabama	1		
Max Miller, Ohio	1		
Rich McCormick, Georgia	1		
Mike Collins, Georgia	1		
Brandon Williams, New York	1		
Tom Kean, New Jersey	1		
Minority	**Aye**	**No**	**Present**
Zoe Lofgren, California	1		
Suzanne Bonamici, Oregon	1		
Haley Stevens, Michigan	1		
Jamaal Bowman, New York			
Deborah Ross, New Carolina	1		
Eric Sorensen, Illinois	1		
Andrea Salinas, Oregon	1		
Val Foushee, North Carolina	1		
Kevin Mullin, California	1		
Jeff Jackson, North Carolina	1		
Emilia Sykes, Ohio	1		
Maxwell Frost, Florida	1		
Yadira Caraveo, Colorado	1		
Summer Lee, Pennsylvania			
Jennifer McClellan, Virgina	1		
Gabe Amo, Rhode Island	1		
Sean Casten, Illinois	1		
Paul Tonko	1		
Total	36	0	

Date: 3/20/24

Result?	Agreed To: [X] Not Agreed To: [ ] Withdrawn: [ ]		
Voice Vote	*Ayes*	*Nays*	*Present*
	36	*0*	

APPLICATION OF LAW TO THE LEGISLATIVE BRANCH

The Committee finds that H.R. 7073 does not relate to the terms and conditions of employment or access to public services or accommodations within the meaning of section 102(b)(3) of the Congressional Accountability Act (Public Law 104–1).

STATEMENT OF OVERSIGHT FINDINGS AND RECOMMENDATIONS OF THE COMMITTEE

In compliance with clause 3(c)(1) of rule XIII and clause (2)(b)(1) of rule X, the Committee's oversight findings and recommendations are reflected in the descriptive portions of this report.

STATEMENT OF GENERAL PERFORMANCE GOALS AND OBJECTIVES

Pursuant to clause (3)(c)(4) of rule XIII, the goal of H.R. 7073 is to improve public-private partnerships and increase Federal research, development, and demonstration related activities for next generation pipeline systems and upgrades to current infrastructure. The Next Generation Pipelines Research and Development Act seeks to invigorate the focus on improving pipeline safety and technology through innovation.

DUPLICATION OF FEDERAL PROGRAMS

Pursuant to clause 3(c)(5) of rule XIII, the Committee finds that no provision of H.R. 7073 establishes or reauthorizes a program of the Federal Government known to be duplicative of another Federal program, including any program that was included in a report to Congress pursuant to section 21 of Public Law 111–139 or identified in the most recent Catalog of Federal Domestic Assistance.

FEDERAL ADVISORY COMMITTEE ACT

The Committee finds that the legislation does not establish or authorize the establishment of an advisory committee within the definition of section 5(b) of the Federal Advisory Committee Act.

UNFUNDED MANDATE STATEMENT

The Committee adopts as its own the estimate of Federal mandates prepared by the Director of the Congressional Budget Office pursuant to section 423 of the Unfunded Mandates Reform Act.

EARMARK IDENTIFICATION

Pursuant to clauses 9(e), 9(f), and 9(g) of rule XXI, the Committee finds that H.R. 7073 does not include any congressional earmarks, limited tax benefits, or limited tariff benefits.

COMMITTEE COST ESTIMATE

Pursuant to clause 3(d)(1) of rule XIII, the Committee adopts as its own the cost estimate prepared by the Director of the Congressional Budget Office pursuant to section 402 of the Congressional Budget Act of 1974. At the time this report was filed, the estimate was not yet available.

NEW BUDGET AUTHORITY, ENTITLEMENT AUTHORITY, AND TAX EXPENDITURES

Pursuant to clause 3(c)(2) of rule XIII, the Committee finds that H.R. 7073 would result in no new or increased budget authority, entitlement authority, or tax expenditures or revenues.

CONGRESSIONAL BUDGET OFFICE COST ESTIMATE

Pursuant to clause 3(c)(3) of rule XIII, at the time this report was filed, the cost estimate prepared by the Director of the Congressional Budget Office pursuant to section 402 of the Congressional Budget Act of 1974 was not available.

CHANGES IN EXISTING LAW MADE BY THE BILL, AS REPORTED

In compliance with clause 3(e) of rule XIII of the Rules of the House of Representatives, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italics, and existing law in which no change is proposed is shown in roman):

INFRASTRUCTURE INVESTMENT AND JOBS ACT

SECTION 1. SHORT TITLE; TABLE OF CONTENTS.

(a) SHORT TITLE.—This Act may be cited as the "Infrastructure Investment and Jobs Act".

(b) TABLE OF CONTENTS.—The table of contents for this Act is as follows:

DIVISION D—ENERGY

* * * * * * *

TITLE III—FUELS AND TECHNOLOGY INFRASTRUCTURE INVESTMENTS

* * * * * * *

Subtitle E—Miscellaneous

* * * * * * *

SEC. 40344. ADVANCED PIPELINE MATERIALS AND TECHNOLOGIES DEMONSTRATION INITIATIVE.

(a) ESTABLISHMENT OF INITIATIVE.—The Secretary shall establish a demonstration initiative (in this section referred to as the "Initiative") under which the Secretary, through a competitive merit review process, shall award financial assistance to eligible entities to carry out demonstration projects on low- to mid-technology readiness level subjects to achieve deployment of technologies that—

(1) are applicable to pipelines and associated infrastructure, including liquefied natural gas facilities and underground and above ground gas and liquid fuel storage facilities; and

(2) involve the development of next generation pipeline systems, components, and related technologies.

(b) DEMONSTRATION PROJECT FOCUS AREAS.—In carrying out the Initiative, the Secretary shall select demonstration projects that best advance research undertaken by the Department and the Department of Transportation and incorporate a range of technology focus areas, which may include the following:

(1) Advanced leak detection and mitigation tools and technologies.

(2) Novel materials, including alloy and nonmetallic materials, to improve integrity for new and existing pipelines, such as pipeline coatings, sleeves, and liners, and corrosion resistant materials, including maximum and minimum flow rates and immunity to electrical discharge processes.

(3) Technologies and methods for retrofitting existing pipelines, resolving material compatibility issues, and minimizing leakage, such as field protective coatings and material treatment.

(4) Advanced manufacturing approaches for producing, fitting, and coupling pipelines, including the fabrication of higher performance pipeline materials and new extrusion technologies or methods to join ultra-high strength and corrosion resistant materials at a scale for distribution.

(5) Advanced sensor technologies and processes that enable real-time or in situ monitoring of pipeline assets to assess and mitigate leaks, both internal and external to the pipeline, which may include the following:

(A) Wireless sensors, such as surface acoustic wave sensors.

(B) Advanced and cost-effective electrochemical sensors.

(C) Distributed fiber optic sensors.

(D) Autonomous sensor systems, including uncrewed aircraft.

(E) Optical methods.

(F) Multi-use platforms for diverse sources.

(G) Hybrid data-analysis platforms.

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

(A) Multiscale modeling, characterization, and optimization of transmission and distribution systems and compo-

nents to aid in planning for optimized and resilient infrastructure.

(B) Correlation between sensor and emissions data at all operational points and across a variety of scales to assure system integrity spanning large areas.

(C) Accurate material lifecycle predictions and simulation platforms to forecast pipeline health.

(D) Secure real time autonomous monitoring and repair capabilities.

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

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

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

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

(10) Strategies and technologies for integrated cybersecurity considerations and countering cyberattacks.

(11) Technologies and methods to reduce potential environmental impacts, including at the atmospheric and subsurface level, associated with pipelines, liquefied natural gas facilities, and gas and liquid fuel storage facilities, such as equipment failure.

(12) Tools to evaluate geographical pipeline data for the feasibility of repurposing existing infrastructure for safe and effective transport and use of alternative fuels, blends, and carbon dioxide.

(13) Tools and technologies applicable to improving the safety, operation, and efficiency of liquefied natural gas facilities and gas and liquid fuel storage facilities.

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

(1) Encourage regional diversity among eligible entities, including participation by such entities located in rural States.

(2) Prioritize technological diversity among eligible entities.

(3) Prioritize a diverse mix of energy, substances, fuel sources, and byproducts, including the following:

(A) Gas and liquid hydrocarbons, including natural gas, renewable natural gas, methane, ethane, and liquefied natural gas.

(B) Carbon dioxide.

(C) Hydrogen.

(D) Biofuels.

(E) Water.

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

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

(H) Any other source the Secretary determines appropriate.

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

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

(6) Ensure that selected projects are coordinated with or expand on the existing technology demonstration programs of the Department.

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

(8) Prioritize projects that can quantifiably reduce the environmental impacts of pipelines and associated infrastructure on air, water, or soil quality in all regions of the United States, especially in underserved and rural communities.

(d) LOCATION.—To the maximum extent practicable, demonstration projects under the Initiative shall be located on sites with existing research infrastructure or with the ability to coordinate with existing Department user facilities and research centers.

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

(1) the Office of Energy Efficiency and Renewable Energy, and

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

pursuant to paragraphs (1) and (6), respectively, of section 10771 of subtitle O of title VI of the Research and Development, Competition, and Innovation Act (enacted as division B of Public Law 117–167), there is authorized to be appropriated to the Secretary of Energy to carry out this section $45,000,000 for fiscal year 2025, and $50,000,000 for each of fiscal years 2026 through 2029.

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

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RESEARCH AND DEVELOPMENT, COMPETITION, AND INNOVATION ACT

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DIVISION B—RESEARCH AND INNOVATION

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TITLE VI—MISCELLANEOUS SCIENCE AND TECHNOLOGY PROVISIONS

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Subtitle O—Department of Energy Research, Development, and Demonstration Activities

SEC. 10771. DEPARTMENT OF ENERGY RESEARCH, DEVELOPMENT, AND DEMONSTRATION ACTIVITIES.

For the purpose of carrying out research, development, and demonstration activities and addressing energy-related supply chain activities in the key technology focus areas (as described in section 10387), there are authorized to be appropriated the following amounts:

(1) OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY.—In addition to amounts otherwise authorized to be appropriated or made available, there are authorized to be appropriated to the Secretary of Energy (referred to in this section as the "Secretary"), acting through the Office of Energy Efficiency and Renewable Energy, for the period of fiscal years 2023 through [2026] *2029*—

(A) $1,200,000,000 to carry out building technologies research, development, and demonstration activities;

(B) $[1,200,000,000] *$1,100,000,000* to carry out sustainable transportation research, development, and demonstration activities;

(C) $1,000,000,000 to carry out advanced manufacturing research, development, and demonstration activities, excluding activities carried out pursuant to subparagraph (D);

(D) $1,000,000,000 to carry out section 454 of the Energy Independence and Security Act of 2007 (42 U.S.C. 17113);

(E) $600,000,000 to carry out advanced materials research, development, and demonstration activities, including relating to upcycling, recycling, and biobased materials; and

(F) $800,000,000 to carry out renewable power research, development, and demonstration activities.

(2) OFFICE OF ELECTRICITY.—In addition to amounts otherwise authorized to be appropriated or made available, there is authorized to be appropriated to the Secretary, acting through the Office of Electricity, for the period of fiscal years 2023 through 2026, $1,000,000,000 to carry out electric grid modernization and security research, development, and demonstration activities.

(3) OFFICE OF CYBERSECURITY, ENERGY SECURITY, AND EMERGENCY RESPONSE.—In addition to amounts otherwise authorized to be appropriated or made available, there is authorized to be appropriated to the Secretary, acting through the Office of Cybersecurity, Energy Security, and Emergency Response, for the period of fiscal years 2023 through 2026, $800,000,000 to carry out cybersecurity and energy system physical security research, development, and demonstration activities.

(4) OFFICE OF NUCLEAR ENERGY.—In addition to amounts otherwise authorized to be appropriated or made available, there is authorized to be appropriated to the Secretary, acting through the Office of Nuclear Energy, for the period of fiscal

years 2023 through 2026, $400,000,000 to carry out advanced materials research, development, and demonstration activities.

(5) OFFICE OF ENVIRONMENTAL MANAGEMENT.—In addition to amounts otherwise authorized to be appropriated or made available, there is authorized to be appropriated to the Secretary, acting through the Office of Environmental Management, for the period of fiscal years 2023 through 2026, $200,000,000 to carry out research, development, and demonstration activities, including relating to artificial intelligence and information technology.

(6) OFFICE OF FOSSIL ENERGY AND CARBON MANAGEMENT.—In addition to amounts otherwise authorized to be appropriated or made available, there are authorized to be appropriated to the Secretary, acting through the Office of Fossil Energy and Carbon Management, for the period of fiscal years 2023 through **[**2026**]** *2029*—

(A) $**[**600,000,000**]** *$445,000,000* to carry out clean industrial technologies research, development, and demonstration activities pursuant to section 454 of the Energy Independence and Security Act of 2007 (42 U.S.C. 17113);

(B) $**[**200,000,000**]** *$100,000,000* to carry out alternative fuels research, development, and demonstration activities; **[**and**]**

(C) $**[**1,000,000,000**]** *$900,000,000* to carry out carbon removal research, development, and demonstration activities**[**.**]***; and*

(D) $455,000,000 to carry out pipeline research, development, demonstration, and commercial application activities.

(7) ADVANCED RESEARCH PROJECTS AGENCY—ENERGY.—In addition to amounts otherwise authorized to be appropriated or made available, there is authorized to be appropriated to the Secretary, acting through the Director of the Advanced Research Projects Agency—Energy established under section 5012 of the America COMPETES Act (42 U.S.C. 16538), for the period of fiscal years 2023 through 2026, $1,200,852,898 to carry out activities of the Advanced Research Projects Agency—Energy.

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EXCHANGE OF LETTERS

Committee on Transportation and Infrastructure
U.S. House of Representatives
Washington, DC 20515

Sam Graves
Chairman

Jack Ruddy, Staff Director

Rick Larsen
Ranking Member

Katherine W. Dedrick, Democratic Staff Director

September 19, 2024

The Honorable Frank D. Lucas
Chairman
Committee on Science, Space, and Technology
United States House of Representatives
2321 Rayburn House Office Building
Washington, D.C. 20515

Dear Chairman Lucas:

I write to you concerning H.R. 7073, the *Next Generation Pipelines Research and Development Act*. The bill was referred primarily to the Committee on Science, Space, and Technology. Specifically, provisions of H.R. 7073 fall within the Rule X jurisdiction of the Committee on Transportation and Infrastructure.

I recognize and appreciate your desire to bring this legislation before the House of Representatives in an expeditious manner, and accordingly, the Committee on Transportation and Infrastructure will forgo action on the bill. However, this is conditional on our mutual understanding that doing so will not prejudice the Committee on Transportation and Infrastructure with respect to the appointment of conferees or to any future jurisdictional claim over the subject matter contained within the bill or similar legislation that falls under the Committee on Transportation and Infrastructure's Rule X jurisdiction. Further, should a conference on the bill be necessary, I appreciate your agreement to support my request to have the Committee represented on the conference committee.

Finally, I would ask that a copy of this letter and your response acknowledging our jurisdictional interest in the bill be included in the Committee Report and *Congressional Record* during consideration of H.R. 7073 on the House floor.

Sincerely,

Sam Graves
Chairman
Committee on Transportation
and Infrastructure

cc: The Honorable Mike Johnson, Speaker
The Honorable Rick Larsen, Ranking Member, Committee on Transportation and Infrastructure
The Honorable Zoe Lofgren Ranking Member, Committee on Science, Space, and Technology
The Honorable Jason Smith, Parliamentarian

FRANK D. LUCAS, Oklahoma
CHAIRMAN

ZOE LOFGREN, California
RANKING MEMBER

Congress of the United States
House of Representatives
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
2321 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515-6301
(202) 225-6371
www.science.house.gov

September 19, 2024

The Honorable Sam Graves
Chairman
Committee on Transportation and Infrastructure
U.S. House of Representatives
Washington, D.C. 20515

Dear Chairman Graves:

I am writing concerning H.R. 7073, the *Next Generation Pipelines Research and Development Act*, which was introduced on January 22, 2024, and solely referred to the Committee on Science, Space, and Technology.

I appreciate you agreeing to withdraw your request for a sequential referral of H.R. 7073, so that the bill may be considered expeditiously. I acknowledge that forgoing your referral claim now does not waive the right to jurisdictional claims in the future on subject matter contained in this bill or similar legislation. Further, I will appropriately consult and involve the Committee on Transportation and Infrastructure as the bill moves forward on issues that fall within your Rule X jurisdiction. In addition, should a conference on the bill be necessary, I would support your request to have the Committee on Transportation and Infrastructure represented on the conference committee.

Finally, I will include of copy of our letter exchange in the Committee Report and the *Congressional Record* when the bill is considered on the House floor.

Sincerely,

Frank D. Lucas
Chairman

cc: The Honorable Mike Johnson, Speaker
The Honorable Zoe Lofgren, Ranking Member, Committee on Science, Space, and Technology
The Honorable Rick Larsen, Ranking Member, Committee on Transportation and Infrastructure
Mr. Jason Smith, Parliamentarian