

ENERGY PIPELINE RESEARCH, DEVELOPMENT, AND DEMONSTRATION ACT

MAY 16, 2002.—Ordered to be printed

Mr. BOEHLERT, from the Committee on Science,
submitted the following

REPORT

[To accompany H.R. 3929]

[Including cost estimate of the Congressional Budget Office]

The Committee on Science, to whom was referred the bill (H.R. 3929) to provide for the establishment of a cooperative Federal research, development, and demonstration program to ensure the integrity of pipeline facilities, and for other purposes, having considered the same, report favorably thereon with an amendment and recommend that the bill as amended do pass.

CONTENTS

	Page
I. Amendment	1
II. Purpose of the Bill	4
III. Background and Need for the Legislation	4
IV. Summary of Hearing	5
V. Committee Actions	6
VI. Summary of Major Provisions of the Bill	7
VII. Section-By-Section Analysis (By Title and Section)	7
VIII. Committee Views	8
IX. Cost Estimate	11
X. Congressional Budget Office Cost Estimate	11
XI. Compliance with Public Law 104-4 (Unfunded Mandates)	12
XII. Committee Oversight Findings and Recommendations	12
XIII. Statement on General Performance Goals and Objectives	12
XIV. Constitutional Authority Statement	12
XV. Federal Advisory Committee Statement	12
XVI. Congressional Accountability Act	13
XVII. Statement on Preemption of State, Local, or Tribal Law	13
XVIII. Changes in Existing Law Made by the Bill, As Reported	13
XIX. Committee Recommendations	13
XX. Proceedings of Full Committee Markup	13

I. AMENDMENT

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 “Energy Pipeline Research, Development, and Demonstration Act”.

SEC. 2. FINDINGS.

The Congress finds that—

- (1) energy pipelines are a key component of the energy infrastructure of the United States;
- (2) pipelines can become more susceptible to failure with age;
- (3) energy pipelines with unprotected rights-of-way and associated above-ground facilities are vulnerable to terrorist attacks and other disruptions and raise safety concerns;
- (4) interruptions in service on major pipelines, whether a result of pipeline failure or purposeful action, can have enormous consequences for the economy and security of the United States;
- (5) new energy sources such as hydrogen will require a new generation of pipelines; and
- (6) a more coordinated research, development, demonstration, and standardization program is needed to ensure the use of existing technologies and the development of new technologies to increase the safety and security of these critical facilities.

SEC. 3. PIPELINE INTEGRITY RESEARCH, DEVELOPMENT, AND DEMONSTRATION.**(a) ESTABLISHMENT OF COOPERATIVE PROGRAM.—**

(1) **IN GENERAL.**—The heads of the participating agencies shall develop and implement a program of research, development, demonstration, and standardization to ensure the integrity of energy pipelines and next-generation pipelines.

(2) **ELEMENTS.**—The program shall include research, development, demonstration, and standardization activities related to—

- (A) materials inspection;
- (B) stress and fracture analysis, detection of cracks, corrosion, abrasion, and other abnormalities inside pipelines that lead to pipeline failure, and development of new equipment or technologies that are inserted into pipelines to detect anomalies;
- (C) internal inspection and leak detection technologies, including detection of leaks at very low volumes;
- (D) methods of analyzing content of pipeline throughput;
- (E) pipeline security, including improving the real-time surveillance of pipeline rights-of-way, developing tools for evaluating and enhancing pipeline security and infrastructure, reducing natural, technological, and terrorist threats, and protecting first response units and persons near an incident;
- (F) risk assessment methodology, including vulnerability assessment and reduction of third-party damage;
- (G) communication, control, and information systems surety;
- (H) fire safety of pipelines;
- (I) improved excavation, construction, and repair technologies; and
- (J) other elements the heads of the participating agencies consider appropriate.

(3) **ACTIVITIES AND CAPABILITIES REPORT.**—Not later than 6 months after the date of the enactment of this Act, the participating agencies shall transmit to the Congress a report on the existing activities and capabilities of the participating agencies, including the national laboratories. The report shall include the results of a survey by the participating agencies of any activities of other Federal agencies that are relevant to or could supplement existing research, development, demonstration, and standardization activities under the program created under this section.

(b) PROGRAM PLAN.—

(1) **IN GENERAL.**—Not later than 1 year after the date of the enactment of this Act, the participating agencies shall prepare and transmit to Congress a 5-year program plan to guide activities under this section. Such program plan shall be submitted to the Pipeline Integrity Technical Advisory Committee established under subsection (c) for review, and the report to Congress shall include the comments of the Advisory Committee. The 5-year program plan shall take into

account related activities of Federal agencies that are not participating agencies.

(2) CONSULTATION.—In preparing the program plan, the participating agencies shall consult with appropriate representatives of State and local government and the private sector, including companies owning energy pipelines and developers of next-generation pipelines, to help establish program priorities.

(3) ADVICE FROM OTHER ENTITIES.—In preparing the program plan, the participating agencies shall also seek the advice of other Federal agencies, utilities, manufacturers, institutions of higher learning, pipeline research institutions, national laboratories, environmental organizations, pipeline safety advocates, professional and technical societies, and any other appropriate entities.

(c) PIPELINE INTEGRITY TECHNICAL ADVISORY COMMITTEE.—

(1) ESTABLISHMENT.—The participating agencies shall establish and manage a Pipeline Integrity Technical Advisory Committee (in this subsection referred to as the “Advisory Committee”). The Advisory Committee shall be established not later than 6 months after the date of the enactment of this Act.

(2) DUTIES.—The Advisory Committee shall—

(A) advise the participating agencies on the development and implementation of the program plan prepared under subsection (b); and

(B) have a continuing role in evaluating the progress and results of research, development, demonstration, and standardization activities carried out under this section.

(3) MEMBERSHIP.—

(A) APPOINTMENT.—The Advisory Committee shall be composed of—

(i) 3 members appointed by the Secretary of Energy;

(ii) 3 members appointed by the Secretary of Transportation; and

(iii) 3 members appointed by the Director of the National Institute of Standards and Technology.

In making appointments, the participating agencies shall seek recommendations from the National Academy of Sciences.

(B) QUALIFICATIONS.—Members appointed to the Advisory Committee shall have experience or be technically qualified, by training or knowledge, in the operations of the pipeline industry, and have experience in the research and development of pipeline or related technologies.

(C) COMPENSATION.—The members of the Advisory Committee shall serve without compensation, but shall receive travel expenses, including per diem in lieu of subsistence, in accordance with sections 5702 and 5703 of title 5, United States Code.

(4) MEETINGS.—The Advisory Committee shall meet at least 4 times each year.

(5) TERMINATION.—The Advisory Committee shall terminate 5 years after its establishment.

(d) REPORTS TO CONGRESS.—Not later than 1 year after the date of the enactment of this Act, and annually thereafter, the participating agencies shall each transmit to the Congress a report on the status and results to date of the implementation of their portion of the program plan prepared under subsection (b).

SEC. 4. MEMORANDUM OF UNDERSTANDING.

Not later than 120 days after the date of the enactment of this Act, the participating agencies shall enter into a memorandum of understanding detailing their respective responsibilities under this Act, consistent with the activities and capabilities identified under section 3(a)(3). Each of the participating agencies shall have the primary responsibility for ensuring that the elements of the program plan within its jurisdiction are implemented in accordance with this Act. The Department of Transportation’s responsibilities shall reflect its expertise in pipeline inspection and information systems surety. The Department of Energy’s responsibilities shall reflect its expertise in low-volume leak detection and surveillance technologies. The National Institute of Standards and Technology’s responsibilities shall reflect its expertise in standards and materials research.

SEC. 5. AUTHORIZATION OF APPROPRIATIONS.

There are authorized to be appropriated—

(1) to the Secretary of Energy \$10,000,000;

(2) to the Secretary of Transportation \$5,000,000; and

(3) to the National Institute of Standards and Technology \$5,000,000, for each of the fiscal years 2003 through 2007 for carrying out this Act.

SEC. 6. DEFINITIONS.

For purposes of this Act—

(1) the term “energy pipeline” means a pipeline system used in the transmission or local distribution of natural gas (including liquefied natural gas), crude oil, or refined petroleum products;

(2) the term “next-generation pipeline” means a transmission or local distribution pipeline system designed to transmit energy or energy-related products, in liquid or gaseous form, other than energy pipelines;

(3) the term “participating agencies” means the Department of Energy, the Department of Transportation, and the National Institute of Standards and Technology; and

(4) the term “pipeline” means an energy pipeline or a next-generation pipeline.

II. PURPOSE OF THE BILL

This bill authorizes cooperative Federal research, development, and demonstration (RD&D) programs to be conducted by the Department of Energy (DOE), Department of Transportation (DOT) and in the National Institute for Standards and Technology (NIST) to ensure the integrity of energy pipelines. This program will develop methods and technologies to help prevent pipeline failures from all causes, including, but not limited to accidental pipeline breaches and intentional attacks.

III. BACKGROUND AND NEED FOR THE LEGISLATION

There are approximately 2.1 million miles of pipelines in the U.S. transporting natural gas, crude oil, petroleum and other products. The DOT regulates these pipelines in partnership with state regulators. States have regulatory responsibility for intrastate pipelines, while the Federal Government oversees the interstate pipeline system. Research and Development (R&D) is critical to support the government’s regulatory mission and to assist industry’s efforts to optimize safety and improve performance and reliability of the nation’s pipelines. Currently, research on the safety and security of the nation’s gas and product pipelines is conducted by DOE, which operates on general revenue funding, and DOT, through the Research and Special Programs Administration (RSPA), which collects industry user fees for R&D. RSPA’s research efforts are an essential part of DOT’s regulatory mission, but some question whether RSPA’s research effort may be too focused on pipeline regulatory goals. The programs authorized under this Act at DOE, DOT and the new program to be established at NIST are designed to supplement the fee-based research at RSPA and to ensure that any existing or future research gaps are filled.

Pipeline integrity and safety are of critical importance to the public, both to reduce injuries and fatalities from pipeline failures and because of the importance of the products carried—natural gas, liquid products and, increasingly, hydrogen and other energy sources for the future. Pipeline accidents over the last several years have caused injuries and deaths around the country. Since September 11th, the fear of accidents has been exacerbated by the fear of terrorism. In many places pipelines carrying volatile materials are at or near the surface and pass through densely populated areas. These pipelines run along rights-of-way that are largely unprotected and not under constant surveillance.

Pipeline breaches, whether accidents or intentional, pose a danger to the public and to the environment. Incidents over the past number of years have caused fatalities, including a large accident at Carlsbad, New Mexico in August 2000 that killed 10 people; an

explosion in Bellingham, Washington, in June 1999 that killed three; and an accident at South Riding, Virginia in the summer of 1998 that killed one.

The loss of pipeline capacity in constrained markets can also create energy shortages that have far-reaching economic consequences. Pipeline accidents can cause price spikes or a longer-term price rise. However, R&D can help reduce incidents, and ensure rapid recovery to minimize risks.

Pipeline Safety reauthorization has been taken up several times in the past several years. The Senate passed comprehensive pipeline safety legislation by voice vote in September of 2000 but the House did not take up the bill. On February 13, 2001, the Senate again passed comprehensive legislation, S. 235, this time by a vote of 98 to 0. Several comprehensive pipeline safety bills have been introduced in the House, including H.R. 144 (by Mr. Dingell and Mr. Oberstar), H.R. 459 (by Mr. Larson), H.R. 2749 (by Ms. Dunn) and H.R. 3609 (by Mr. Tauzin and Mr. Young). These bills cover a wide range of pipeline safety issues, including the qualification and training of pipeline safety personnel, pipeline integrity inspection, security at pipeline facilities, enforcement of pipeline safety requirements, public access to information about pipelines, state oversight, coordinated environmental review of pipeline projects, the use of cost-benefit analysis in regulatory decision-making, and the conduct of Federal pipeline safety research and development.

On March 12, 2002, Mr. Hall of Texas introduced H.R. 3929, the Energy Pipeline Research, Development, and Demonstration Act, along with Mr. Smith of Texas. The Committee on Science marked up H.R. 3929 on March 20th. The legislation will address some of the research needs posed by the Nation's aging and vulnerable pipeline infrastructure and the need for a new generation of pipelines to transport products in the future. The bill sets out a RD&D mission for the DOE, DOT and NIST. Both DOE and DOT have existing pipeline safety research programs, but the Administration proposes to transfer DOE's research program functions to DOT in FY 2003. The DOE program would be preserved under provisions contained in H.R. 3929. In addition, the bill authorizes a research program to be undertaken by NIST to develop pipeline standards. NIST's research capabilities in materials research related to pipeline safety date back as far as World War II when NIST assisted the Navy in research on metal fatigue. Over the years, NIST has worked with both the American Gas Association and the American Petroleum Institute by making precise measurements of the flow rates of pipeline contents. In addition, NIST has some valuable experience in connection with the National Earthquake Hazards Research Program that will allow it to lend a variety of relevant expertise to efforts to improve pipeline safety.

IV. SUMMARY OF HEARING

On March 13, 2002, the Subcommittee on Energy of the House Committee on Science held a hearing titled H.R. 3929: Energy Pipeline Research, Development, and Demonstration Act. This hearing examined the Committee's legislation, H.R. 3929 designed to advance the science needed to protect the Nation's critical pipeline infrastructure from attack or failure. The Committee's legislation will increase R&D efforts to improve surveillance, security,

fault detection (including difficult-to-detect low-level leaks), and to measure the robustness of pipeline materials. It is hoped that such research can reduce repair and recovery times after a pipeline failure. Witnesses included pipeline industry stakeholders who testified on provisions included in H.R. 3939 and on how a government/industry pipeline safety research partnership will best improve pipeline safety.

Mr. Terry Boss, Vice President of Environment, Safety and Operations for the Interstate Natural Gas Association of America testified on the importance of pipeline research and the different funding mechanisms employed to finance these efforts. He indicated that new funding mechanisms need to be put in place to make up for the Federal Energy Regulatory Commission (FERC) R&D surcharge which expires in 2004. The FERC surcharge-funded research program has collected as much as \$212 million a year. He also raised some questions about NIST's role in pipeline safety R&D and urged the Committee to give a higher priority to restoring DOE's funding.

Mr. Tim Felt, the President of the Explorer Pipeline Corporation appeared on behalf of the Association of Oil Pipe Lines. He testified that the DOT's Office of Pipeline Safety has the longest experience in pipeline safety R&D and perhaps the best understanding of the needs of the regulated community. He felt that DOE had an important R&D role, since pipeline safety is such an important public and environmental priority, and DOE has access to general revenue funds. He discussed technologies that DOE has developed that may be useful for pipeline operators. Finally, he advised the committee to name a lead agency to minimize disagreement among the agencies about the roles and functions of each in the overall R&D program authorized by H.R. 3929.

Dr. Nirmal Chatterjee, Vice President of Environmental, Health and Safety and Corporate Engineering for Air Products and Chemicals, Inc. testified that hydrogen pipelines operate in a different manner from natural gas and products pipelines and, as such, will require substantially different R&D efforts. These differences include enhanced leak flow detection, automated shut off valves and greater variability in pipeline diameter. He predicted that most hydrogen production would be local and said that he did not foresee the need for an extensive hydrogen pipeline system in the next 10–20 years.

Mr. Stan Wise, a Commissioner with the Georgia Public Service Commission, appeared on behalf of the National Association of Regulatory Utility Commissioners (NARUC). His testimony focused on a NARUC R&D funding resolution that is not a part of H.R. 3929. This mandatory funding scheme would collect approximately \$65 million in funding for pipeline and storage R&D programs and has the support of American Gas Association (which represents mostly local distribution companies).

V. COMMITTEE ACTIONS

On March 12, 2002, Ranking Minority Member Ralph Hall and Mr. Lamar Smith of the Committee on Science introduced H.R. 3939, the Energy Pipeline Research, Development, and Demonstration Act, a bill to direct the heads of the DOE, DOT, and NIST to develop and implement a cooperative Federal research, develop-

ment, demonstration, and standardization program to ensure the integrity of pipeline facilities. As summarized above, the Subcommittee on Energy of the Committee on Science heard testimony relevant to the programs authorized in H.R. 3929 at a hearing on March 13, 2002. The Committee on Science met to consider H.R. 3929 on March 20, 2002, and entertained an amendment in the nature of a substitute offered by Mr. Hall, Ranking Minority Member of the Committee on Science, on behalf of himself and Mr. Smith of Texas. The amendment, which was adopted by voice vote: (1) incorporates some recommendations of witnesses at the March 13th hearing, and written comments and consultations with other interested parties; (2) clarifies that the RD&D program includes advances related to both traditional energy pipelines as well as “next generation” pipelines. (Section 6 defines “next-generation pipelines” to include any pipeline carrying energy or energy-related products other than natural gas, crude oil or refined petroleum products); and, (3) makes several changes to the findings in Section 2 to clarify the scope of the bill and its provisions. The motion to adopt the bill, as amended, was agreed to by a voice vote. The motion to report the bill, as amended, was agreed to by a voice vote.

VI. SUMMARY OF MAJOR PROVISIONS OF THE BILL

To provide for the establishment of a cooperative Federal RD&D program to ensure the integrity and safety of pipelines and related facilities through a coordinated Federal program of pipeline safety RD&D, and standardization program conducted by the DOE, DOT and NIST (identified as “the participating agencies”). The bill:

- Requires that the participating agencies provide to Congress an analysis of their RD&D and standardization capabilities and activities within six months of enactment of this legislation.
- Requires that the participating agencies submit to Congress within one year of enactment, a plan for RD&D and standardization efforts to be undertaken under this legislation.
- Establishes a Pipeline Integrity Technical Advisory Committee (PITAC).
- Directs PITAC to review the plan and provide ongoing assessments of the RD&D and standardization efforts authorized under the Act.
- Calls upon the participating agencies to enter into a Memorandum of Understanding (MOU) within 120 days of enactment to outline research capabilities and responsibilities for each of the three agencies.
- Authorizes to be appropriated each fiscal year (2002–2006): \$10,000,000 to DOE; \$5,000,000 to DOT; and \$5,000,000 to NIST. These funds are in addition to any other fee-based funding used for pipeline research programs at DOT.

VII. SECTION-BY-SECTION ANALYSIS (BY TITLE AND SECTION)

Section 1. Short title

Subsection 1(a) cites the Act as the Energy Pipeline Research, Development, and Demonstration Act, and subsection 1(b) contains the bill’s table of contents.

Section 2. Findings

Section 2 contains the Committee's findings on the need for this legislation.

Section 3. Pipeline integrity research, development, and demonstration

Requires DOE, DOT, and NIST to develop and implement an RD&D program focused on energy pipeline safety. Requires participating agencies to submit a report of activities and capabilities to Congress no later than six months after enactment and a five-year program plan to the PITAC no later than one year after enactment. The Act provides for coordination among participating agencies, state and local governments, and the pipeline industry with advice from a number of outside entities in preparing the plan. Establishes the PITAC to advise and evaluate the plan. The PITAC shall be composed of nine members, three each appointed by DOE, DOT and NIST under recommendations from the National Academy of Sciences. PITAC members shall be qualified technically and serve without compensation other than travel expenses. The PITAC will meet four times each year and will be terminated after five years. The participating agencies will submit annual reports on the status of their portion of the program.

Section 4. Memorandum of understanding

Requires DOE, DOT and NIST to enter into a MOU detailing their roles in this program. DOT's responsibilities shall include pipeline inspection and information systems surety. DOE's responsibilities shall include low-volume leak detection and surveillance technologies. NIST's responsibilities shall include standards and materials research.

Section 5. Authorization of appropriations

Authorizes to be appropriated each fiscal year (2002–2006): \$10,000,000 to DOE, \$5,000,000 to DOT and \$5,000,000 to NIST. These funds are in addition to any other fee-based funding used for pipeline research programs at DOT.

Section 6. Definitions

Defines "participating agencies" as the DOE, DOT and NIST.

VIII. COMMITTEE VIEWS

Section 2. Findings

Fire safety of pipelines, always a difficult problem, becomes more difficult in pipelines that move methanol, hydrogen, and other higher energy content fuels. Hydrogen is a particularly hazardous fuel; it is extremely reactive and leads to extremely high temperature fires. Both methanol and hydrogen flames are not detectable to the human eye which complicates both detection and fire fighting efforts, yet virtually no research has been done on developing optimal strategies for leak and fire detection. NIST's fire research division, which has decades of experience in developing, verifying, and utilizing fire measurements and methods of prediction is uniquely situated to help fill these research gaps. NIST has strong capabilities related to laboratory measurement of fire, integrating

research results into models, and conducting large-scale fire experiments to demonstrate the use and value of the research projects.

Section 3. Pipeline integrity research, development, and demonstration

Section 3(a)(2)(B) contains language related to pipeline degradation including cracks, corrosion, abrasion and other abnormalities as well as stress and fractures, which can cause a range of problems, including catastrophic failure. Detection and analysis of problems before they become severe is essential to the safe, efficient and economic operation of pipelines. This section calls for an integrated research, development, demonstration and standardization program to improve our understanding of pipeline failure modes and stresses through improved technologies and analytical techniques. This RD&D should include in-line inspection devices that can more reliably detect features such as hard spots, stress corrosion cracking, and other actual or potential points-of-failure and should include “next-generation” pipelines which are transmission pipelines other than oil and gas pipelines carrying new forms of energy such as hydrogen. These programs should take into account the unique characteristics of different pipelines and seek appropriate solutions for the different types of products, operating environments, physical layout, pipeline pressures and maintenance duty cycles.

Section 3(a)(2)(C) calls for RD&D on low-level pipeline leaks, which are difficult to detect by conventional means and are often a precursor to serious threats to health and environmental safety. Detection of these small leaks requires development of new, low-cost, high-confidence detection technologies and techniques. Research is needed to develop acoustic and fiber optic sensors, among others, to measure these parameters on-line and in real time. These detection methods must take into account the unique characteristics of different pipelines and seek appropriate solutions for the different types of products, operating environments, physical layout, pipeline pressure and maintenance duty cycles.

The Oak Ridge National Laboratory (ORNL) has extensive expertise in analytical technologies that could be employed for monitoring the integrity of the flowing material, leaks, aging, and other problems associated with pipelines. For example, external leak detection and analysis of the material in the pipeline could be accomplished with small, automated mass spectrometers, similar to those designed for the Department of Defense for chemical/biological threat agents. Microfabricated mass spectrometers and ion-mobility spectrometers being developed at ORNL are able to detect level concentrations of gas-phase species down to parts-per-billion levels and could be produced at low cost. Distributed arrays of such sensors would allow continuous remote monitoring of pipeline integrity.

ORNL has expertise and unique facilities in materials research, inspection, stress and fracture analysis, and the detection of cracks. In one project focused on pipeline safety, an experimentally based model was developed that gives insight into the mechanisms involved when pipelines are hydrostatically proof tested in the field. Use of this model could help avoid the damage that sometimes results from such field testing. The Lawrence Berkeley National Lab-

oratory (LBNL) is developing two technologies to ensure the integrity of pipelines in refineries: optical fiber based acoustic monitoring for analysis of cracking and corrosion; and optical-fiber-based spectroscopy for leak detection.

Section 3(a)(2)(E) calls for development of improved surveillance of pipeline rights-of-way. This improved surveillance will be used to detect threats ranging from accidental construction damage to deliberate attack. These threats also consist of cyber threats to pipeline control and monitoring, and supervisory control and data acquisition (SCADA) systems.

RD&D under Section 3(a)(2)(F) should include LBNL's Exposure and Risk Analysis Group's world-recognized capabilities in risk assessment methodology with particular strengths in emissions-to-dose assessment, biokinetics, and methods for addressing uncertainty and variability.

The purpose of the Activities and Capabilities Report required under section 3(a)(3) is to gather information and catalog expertise throughout the government and its laboratories related or useful to the pipeline hazard reduction RD&D and standardization activities planned under this Act, thereby creating a baseline on which to structure the program plan required under 3(b). It is our hope that within six months, the participating agencies will be able to develop a clear picture of what is known and what is not known related to both traditional and next generation pipelines and that this knowledge will allow the plan to be developed in a way that minimizes unnecessary overlap among agencies, alerts all relevant agencies that this work will be undertaken, and ensures that all relevant agencies integrate their research planning so that this Act leads to the best possible use of the program's limited resources.

The Committee intends that the appointees to PITAC under Section 3(c) have training and experience that is relevant and applicable to pipeline safety and security operations, not necessarily "hands-on" experience in the operation of pipelines.

Section 4. Memorandum of understanding

Development of the MOU under Section 4 should require the participating agencies to coordinate in advance of carrying out any other activities under the Act to learn what other agencies bring to the program and to divide up responsibilities in a manner that minimizes duplication and that makes the best use of existing expertise. This section lists specific areas of expertise for the DOT, the DOE, and NIST that are clearly relevant to the work to be accomplished under the Act and which should be included in the MOU. However, since each of the agencies has far-ranging abilities, it is assumed that the MOU will be far more exhaustive than the statutory language and will list in each case more of the expertise that each agency brings to this project. The Committee on Science of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate expect to be kept informed of the progress towards development of the MOU and to be sent final versions of the MOU as soon as it becomes available.

Section 6. Definitions

The term "next-generation pipeline" is meant to include all foreseeable types of pipelines needed to carry alternative liquid and

gaseous fuels such as hydrogen and methanol, but is not meant to include incremental improvements in crude oil, natural gas, and refined petroleum product pipelines.

IX. COST ESTIMATE

A cost estimate and comparison prepared by the Director of the Congressional Budget Office under section 402 of the Congressional Budget Act of 1974 has been timely submitted to the Committee on Science prior to the filing of this report and is included in Section X of this report pursuant to House Rule XIII, clause 3(c)(3).

H.R. 3929 does contain new budget authority, credit authority, or changes in revenues or tax expenditures. Assuming that the sums authorized under the bill are appropriated, H.R. 3929 does authorize additional discretionary spending, as described in the Congressional Budget Office report on the bill, which is contained in Section X of this report.

X. CONGRESSIONAL BUDGET OFFICE COST ESTIMATE

U.S. CONGRESS,
CONGRESSIONAL BUDGET OFFICE,
Washington, DC, April 5, 2002.

Hon. SHERWOOD L. BOEHLERT,
*Chairman, Committee on Science,
House of Representatives, Washington, DC.*

DEAR MR. CHAIRMAN: The Congressional Budget Office has prepared the enclosed cost estimate for H.R. 3929, the Energy Pipeline Research, Development, and Demonstration Act.

If you wish further details on this estimate, we will be pleased to provide them. The CBO staff contact is Rachel Milberg.

Sincerely,

BARRY B. ANDERSON
(For Dan L. Crippen, Director).

Enclosure.

H.R. 3929—Energy Pipeline Research, Development, and Demonstration Act

Summary: H.R. 3929 would direct the Department of Energy, the Department of Transportation, and the National Institute of Standards and Technology to develop a five-year program for finding better ways to construct, inspect, and repair energy pipelines; reduce threats to energy pipelines from terrorists and the natural environment; and assess risks associated with energy pipelines. The bill would authorize the appropriation of \$20 million a year over the 2003–2007 period for this new program.

CBO estimates that implementing this bill would cost \$67 million over the 2003–2007 period, and another \$33 million after fiscal year 2007. Enacting H.R. 3929 would not affect direct spending or receipts; therefore, pay-as-you-go procedures would not apply.

H.R. 3929 contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act (UMRA) and would impose no cost on the budgets of state, local, or tribal governments.

Estimated cost to the Federal Government: The estimated budgetary impact of H.R. 3929 is shown in the following table. The costs

of this legislation fall within budget function 400 (transportation). For this estimate, CBO assumes enactment of H.R. 3929 in fiscal year 2002 and appropriation of the authorized amounts. Estimates of spending are based on information from the Department of Energy and historical spending patterns of similar programs.

	By fiscal year, in millions of dollars—				
	2003	2004	2005	2006	2007
Authorization level	20	20	20	20	20
Estimated outlays	3	11	15	18	20

Pay-as-you-go considerations: None.

Intergovernmental and private-sector impact: H.R. 3929 contains no intergovernmental or private-sector mandates as defined in UMRA and would impose no cost on the budgets of state, local, or tribal governments.

Estimate prepared by: Federal costs: Rachel Milberg; impact on state, local, and tribal governments: Angela Seitz; impact on the private sector: Jean Talarico.

Estimate approved by: Peter H. Fontaine, Deputy Assistant Director for Budget Analysis.

XI. COMPLIANCE WITH PUBLIC LAW 104–4 (UNFUNDED MANDATES)

H.R. 3929 contains no unfunded mandates.

XII. COMMITTEE OVERSIGHT FINDINGS AND RECOMMENDATIONS

The Committee on Science’s oversight findings and recommendations are reflected in the body of this report.

XIII. STATEMENT ON GENERAL PERFORMANCE GOALS AND OBJECTIVES

Pursuant to clause (3)(c)(4) of House Rule XIII, the goal and objective of the bill is to authorize the DOT, DOE and NIST to develop and implement an R&D program focused on enhancing energy pipeline safety.

XIV. CONSTITUTIONAL AUTHORITY STATEMENT

Article I, section 8 of the Constitution of the United States grants Congress the authority to enact H.R. 3929.

XV. FEDERAL ADVISORY COMMITTEE STATEMENT

Although DOT currently has two technical advisory committees that provide advice on technical aspects of the DOT’s standard setting responsibilities, the functions of the Pipeline Integrity Technical Advisory Committee (PITAC) established by H.R. 3929 are not currently being nor could they be performed by one or more agencies or by enlarging the mandate of another existing advisory committee.

The Office of Pipeline Safety in DOT has two advisory committees that have been mandated by legislation. The Natural Gas Pipeline Safety Act of 1968 requires establishment of the Technical Pipeline Safety Standards Committee (TPSSC), and the Hazardous Liquid Safety Act of 1979 requires creation of the Technical Hazardous Liquid Pipeline Safety Standards Committee (THLPSSC). The primary purpose of these two existing Committees is to review

proposed pipeline safety standards for technical feasibility, reasonableness, cost effectiveness and practicability. The Committees also serve as a sounding board for discussing pipeline safety policy issues as well as legislative initiatives. The PITAC, established under section 3(c), on the other hand, would provide technical advice to the three participating agencies on the development and implementation of the RD&D program and in evaluating the program's progress and results.

XVI. CONGRESSIONAL ACCOUNTABILITY ACT

The Committee finds that H.R. 3929 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).

XVII. STATEMENT ON PREEMPTION OF STATE, LOCAL, OR TRIBAL LAW

This bill is not intended to preempt any state, local, or tribal law.

XVIII. CHANGES IN EXISTING LAW MADE BY THE BILL, AS REPORTED

This measure does not amend any existing Federal statute.

XIX. COMMITTEE RECOMMENDATIONS

On March 20, 2002, a quorum being present, the Committee on Science favorably reported H.R. 3929, Energy Pipeline Research, Development, and Demonstration Act, by a voice vote, and recommended its enactment.

XX. PROCEEDINGS OF THE FULL COMMITTEE MARKUP

PROCEEDINGS OF THE FULL COMMITTEE MARKUP ON H.R. 3929, ENERGY PIPELINE RESEARCH, DEVELOPMENT, AND DEM- ONSTRATION ACT

WEDNESDAY, MARCH 20, 2002

HOUSE OF REPRESENTATIVES,
COMMITTEE ON SCIENCE,
Washington, DC.

The Committee met, pursuant to call, at 10:40 a.m., in Room 2318 of the Rayburn House Office Building, Hon. Sherwood L. Boehlert [Chairman of the Committee] presiding.

Chairman BOEHLERT. The Committee on Science will be in order. First of all, I would like to advise all members that there is a sign-up sheet before each individual place, reflecting the views and estimates, and we would like you to read the Committee's views and estimates, and hopefully, you will be inspired to sign the sheet indicating your approval. With that, let us get moving.

The Committee on Science will be in order. Pursuant to notice, the Committee on Science is meeting today to consider the following measures. H.R. 2051, A Bill to Provide for the Establishment of Regional Plant Genome and Gene Expression Research and

Development Centers. Thank you, Mr. Smith. H.R. 3389, the National Sea Grant Program Act Amendments of 2002, and H.R. 3929, the Energy Pipeline Research, Development, and Demonstration Act.

I ask unanimous consent for the authority to recess the Committee at any point, and without objection it is so ordered. Mr. Hall will be making his way here to present his opening remarks. Let me do mine.

The three bills we have before us this morning deal with very different topics and come from three different subcommittees, but they do have a few key aspects in common. First, all three are bipartisan consensus bills. Once again, the Committee's majority and minority staffs have worked in tandem to draft the bills that advance proposals from members on both sides of the aisle. This Committee continues to set an example of working together that others would do well to follow. Also, all three bills are designed to promote research and development, especially, long-term research and development that will help address critical societal problems.

H.R. 2051 was designed to help strengthen American agriculture and alleviate malnutrition in the developing world. H.R. 3389 will help protect the nation's coastal areas and fisheries and combat invasive species. And H.R. 3929 will help prevent pollution and pipeline explosions. These bills are not funding research for the sake of research whether they deal with abstruse matters of no concern to the rest of Congress or to the rest of the country. The research advances that will result from these measures will help improve the daily lives of people here and around the world. Let me say just a little bit more about each of these bills and then they will be described more fully by their sponsors as we mark up each one.

H.R. 2051, offered by Chairman Nick Smith and Ranking Minority Member Eddie Bernice Johnson, will create two new programs on plant biotechnology at the National Science Foundation. The bill offers a balanced approach to biotech authorizing research not only to develop new genetic engineering techniques and products, but also, to examine the ecological and social consequences of bio-engineered plants.

H.R. 3389, offered by Chairman Vernon Ehlers and Ranking Minority Member Jim Barcia, will reauthorize and reform the Sea Grant Program, while keeping it within the National Oceanographic and Atmospheric Administration. We will have to negotiate a final version of the bill with the Resources Committee before it can come to the Floor, and we plan to push in a strong and unified fashion for our version of this bill. However, we will, as Dr. Ehlers has committed, find a way to address the concerns Mr. Underwood has raised about the way the Sea Grant Program deals with the Pacific Islands.

Finally, we will take up H.R. 3929, offered by Ranking Minority Member Ralph Hall and Lamar Smith, which will ensure that all the federal agencies with expertise in pipeline safety are engaged in research in that important area. We will work with the Energy and Commerce, and Transportation and Infrastructure Committees to move our bill as part of a comprehensive pipeline safety measure.

So we have much to accomplish today and we will do it in the bipartisan fashion that has become the Committee's hallmark. With that, the Chair recognizes Mr. Hall.

Mr. HALL. Mr. Chairman, as usual, you have covered the waterfront pretty well. I just want to say that I support these three bills. We will have an amendment for the third bill, but on H.R. 2051, I want to congratulate Nick Smith and Ranking Democratic Member Eddie Bernice Johnson for their efforts on it. And of course, on the Sea Grant Program, your bill, I certainly support that and look forward to working with you, and you have recognized Chairman Ehlers and Representative Barcia. And on my bill, I will have an amendment of 3929 that we will discuss when we have a little more time. With that, thank you for doing a good job, and I yield back the balance of my time.

[The prepared statement of Mr. Hall follows:]

PREPARED STATEMENT OF REPRESENTATIVE RALPH M. HALL

Mr. Chairman and Members of the Committee,

First of all I want to thank you for working with us to develop this bill and bring it to the Full Committee for markup today. This bill is the product of a close collaboration on both sides of the aisle to produce legislation that will be of immense value to this Nation in ensuring that the natural gas, crude oil and refined products pipelines of this country are safer and more secure facilities as we move into the 21st century. And we are taking the first steps toward addressing the special considerations that need to be considered in the development of what we call the next-generation pipelines—those that will carry hydrogen, CO₂ and perhaps other substances that will be part of the energy infrastructure of the future.

Our thanks also go to our staffs for their hard work in preparing the bill for our consideration today. The legislative process has worked as it should—we held a legislative hearing and got some first-rate testimony on what the appropriate federal role should be in research and development. And we incorporated many of those recommendations in the substitute to the bill, which I will offer shortly. Other recommendations and suggestions will be reflected in the report to accompany the bill.

These pipelines are an essential part of the Nation's energy infrastructure. They are so affected with the public interest that special efforts need to be taken now to make certain that new technologies are developed or existing technologies adapted to make certain that these facilities are as safe and secure as they can be—and as soon as they can be.

The bill brings the considerable capabilities of the Department of Energy (DOE) and its National Laboratories and the National Institute of Standards and Technology (NIST) to bear in a much more prominent way to provide solutions to the safety and security needs of the Nation's pipelines. The bill provides considerable flexibility to the participating agencies, the Department of Transportation, DOE and NIST, to develop a research plan—one that will be reviewed by a Technical Advisory Committee to ensure that the work being done is relevant and appropriate.

Our intention is to merge this bill with the Pipeline Safety bill introduced by Don Young and Billy Tauzin. We believe that the language of this bill is very complementary and helpful to the larger bill, and we look forward to working with them, and the other members of the Transportation and Infrastructure and Energy and Commerce Committees in getting their support for these provisions.

With that, Mr. Chairman, I yield back the balance of my time.

Chairman BOEHLERT. Thank you very much. And let me tell you, it is the Chair's intent to move with dispatch. These bills have been looked at with the respective committee staffs. They are very able and very professional staffs, so we don't envision a long markup here. We have a hearing immediately after with some very distinguished guests, and I know a number of our colleagues have conflicting commitments. So without objection, all members' opening statements will be placed in the record at this point.

H.R. 3929

11:03 a.m.

Chairman BOEHLERT. We will now consider H.R. 3929, the Energy Pipeline Research, Development, and Demonstration Act. I ask unanimous consent that the bill be considered as read and open to amendment at any point. I ask the members to proceed with the amendments in the order on the roster. Without objection, so ordered.

[H.R. 3929 follows:]

107TH CONGRESS
2D SESSION

H. R. 3929

To provide for the establishment of a cooperative Federal research, development, and demonstration program to ensure the integrity of pipeline facilities, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

MARCH 12, 2002

Mr. HALL of Texas (for himself, Mr. SMITH of Texas, Ms. WOOLSEY, Mr. BOEHLERT, Mr. UDALL of Colorado, Mr. BARTLETT of Maryland, Mr. CALVERT, and Mr. SHOWS) introduced the following bill; which was referred to the Committee on Science, and in addition to the Committees on Transportation and Infrastructure, and Energy and Commerce, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

A BILL

To provide for the establishment of a cooperative Federal research, development, and demonstration program to ensure the integrity of pipeline facilities, 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 “Energy Pipeline Re-
5 search, Development, and Demonstration Act”.

1 **SEC. 2. FINDINGS.**

2 The Congress finds that—

3 (1) natural gas and hazardous liquid pipelines
4 are a key component of the energy infrastructure of
5 the United States;

6 (2) many of these pipelines are aging facilities
7 and therefore more susceptible to failure;

8 (3) these facilities, with their unprotected
9 rights-of-way, are also highly vulnerable to terrorist
10 attacks and other disruptions;

11 (4) interruptions in service on major pipelines,
12 whether a result of pipeline failure or purposeful ac-
13 tion, can have enormous consequences for the econ-
14 omy and security of the United States;

15 (5) new energy sources such as hydrogen will
16 require a new generation of pipelines; and

17 (6) a more coordinated research, development,
18 demonstration, and standardization program is need-
19 ed to ensure the use of existing technologies and the
20 development of new technologies to increase the
21 safety and security of these critical facilities.

22 **SEC. 3. PIPELINE INTEGRITY RESEARCH, DEVELOPMENT,**
23 **AND DEMONSTRATION.**

24 (a) **ESTABLISHMENT OF COOPERATIVE PROGRAM.—**

25 (1) **IN GENERAL.**—The heads of the partici-
26 pating agencies shall develop and implement a pro-

1 gram of research, development, demonstration, and
2 standardization to ensure the integrity of pipeline fa-
3 cilities.

4 (2) ELEMENTS.—The program shall include re-
5 search, development, demonstration, and standard-
6 ization activities related to—

7 (A) materials research and inspection;

8 (B) stress and fracture analysis, and detec-
9 tion of cracks, corrosion, abrasion, and other
10 abnormalities inside pipelines that lead to pipe-
11 line failure;

12 (C) leak detection technologies, including
13 detection of leaks at very low volumes;

14 (D) flow metering and methods of ana-
15 lyzing content of pipeline throughput;

16 (E) pipeline security, including improving
17 the surveillance of pipeline rights-of-way;

18 (F) risk assessment methodology;

19 (G) information systems surety; and

20 (H) other elements the heads of the par-
21 ticipating agencies consider appropriate.

22 (3) ACTIVITIES AND CAPABILITIES REPORT.—

23 Not later than 6 months after the date of the enact-
24 ment of this Act, the participating agencies shall
25 transmit to the Congress a report on the activities

1 and capabilities of the participating agencies, includ-
2 ing the national laboratories, and any other Federal
3 agencies that are relevant to or could contribute to
4 research, development, demonstration, and standard-
5 ization activities under the program plan prepared
6 under this section.

7 (b) PROGRAM PLAN.—

8 (1) IN GENERAL.—Not later than 1 year after
9 the date of the enactment of this Act, the partici-
10 pating agencies shall prepare and transmit to Con-
11 gress a 5-year program plan to guide activities
12 under this section. Such program plan shall be sub-
13 mitted to the Pipeline Integrity Technical Advisory
14 Committee established under subsection (c) for re-
15 view, and the report to Congress shall include the
16 comments of the Advisory Committee. The 5-year
17 program plan shall describe related activities of Fed-
18 eral agencies that are not participating agencies.

19 (2) CONSULTATION.—In preparing the program
20 plan, the participating agencies shall consult with
21 appropriate representatives of State and local gov-
22 ernment and the private sector, including the gas,
23 crude oil, and petroleum product pipeline industries,
24 to help establish program priorities and to select and
25 prioritize appropriate project proposals.

1 (3) ADVICE FROM OTHER ENTITIES.—In pre-
2 paring the program plan, the participating agencies
3 may also seek the advice of other Federal agencies,
4 utilities, manufacturers, institutions of higher learn-
5 ing, pipeline research institutions, national labora-
6 tories, environmental organizations, pipeline safety
7 advocates, professional and technical societies, and
8 any other appropriate entities.

9 (c) PIPELINE INTEGRITY TECHNICAL ADVISORY
10 COMMITTEE.—

11 (1) ESTABLISHMENT.—The participating agen-
12 cies shall establish and manage a Pipeline Integrity
13 Technical Advisory Committee (in this subsection re-
14 ferred to as the “Advisory Committee”). The Advi-
15 sory Committee shall be established not later than 6
16 months after the date of the enactment of this Act.

17 (2) DUTIES.—The Advisory Committee shall—

18 (A) advise the participating agencies on
19 the development and implementation of the pro-
20 gram plan prepared under subsection (b); and

21 (B) have a continuing role in evaluating
22 the progress and results of research, develop-
23 ment, demonstration, and standardization ac-
24 tivities carried out under this section.

25 (3) MEMBERSHIP.—

1 (A) APPOINTMENT.—The Advisory Com-
2 mittee shall be composed of—

3 (i) 3 members appointed by the Sec-
4 retary of Energy;

5 (ii) 3 members appointed by the Sec-
6 retary of Transportation; and

7 (iii) 3 members appointed by the Di-
8 rector of the National Institute of Stand-
9 ards and Technology.

10 In making such appointments, the participating
11 agencies shall seek recommendations from the
12 National Academy of Sciences.

13 (B) QUALIFICATIONS.—Members ap-
14 pointed to the Advisory Committee shall have
15 experience or be technically qualified, by train-
16 ing or knowledge, in the operations of either the
17 hazardous liquid or gas pipeline industries, and
18 have experience in the research and develop-
19 ment of pipeline or related technologies.

20 (C) COMPENSATION.—The members of the
21 Advisory Committee shall serve without com-
22 pensation, but shall receive travel expenses, in-
23 cluding per diem in lieu of subsistence, in ac-
24 cordance with sections 5702 and 5703 of title
25 5, United States Code.

1 (4) MEETINGS.—The Advisory Committee shall
2 meet at least 4 times each year.

3 (5) TERMINATION.—The Advisory Committee
4 shall terminate 5 years after its establishment.

5 (d) REPORTS TO CONGRESS.—Not later than 1 year
6 after the date of the enactment of this Act, and annually
7 thereafter, the participating agencies shall each transmit
8 to the Congress a report on the status and results to date
9 of the implementation of their portion of the program plan
10 prepared under subsection (b).

11 **SEC. 4. MEMORANDUM OF UNDERSTANDING.**

12 Not later than 120 days after the date of the enact-
13 ment of this Act, the participating agencies shall enter
14 into a memorandum of understanding detailing their re-
15 spective responsibilities under this Act, consistent with the
16 activities and capabilities identified under section 3(a)(3).
17 Each of the participating agencies shall have the primary
18 responsibility for ensuring that the elements of the pro-
19 gram plan within their jurisdiction are implemented in ac-
20 cordance with this Act. The Department of Transpor-
21 tation's responsibilities shall reflect its expertise in pipe-
22 line inspection and information systems surety. The De-
23 partment of Energy's responsibilities shall reflect its ex-
24 pertise in low-volume leak detection and surveillance tech-
25 nologies. The National Institute of Standards and Tech-

1 nology's responsibilities shall reflect its expertise in stand-
2 ards and materials research.

3 **SEC. 5. AUTHORIZATION OF APPROPRIATIONS.**

4 There are authorized to be appropriated—

5 (1) to the Secretary of Energy \$10,000,000;

6 (2) to the Secretary of Transportation
7 \$5,000,000; and

8 (3) to the National Institute of Standards and
9 Technology \$5,000,000,

10 for each of the fiscal years 2002 through 2006 for car-
11 rying out this Act.

12 **SEC. 6. DEFINITION.**

13 For purposes of this Act, the term “participating
14 agencies” means the Department of Energy, the Depart-
15 ment of Transportation, and the National Institute of
16 Standards and Technology.

○

Section-by-Section Analysis of H.R. 3929
The “Energy Pipeline Research, Development, and Demonstration Act”
(Hon. Ralph M. Hall; Introduced March 12, 2002)

Title: To provide for the establishment of a cooperative Federal research, development, and demonstration program to ensure the integrity of pipeline facilities, and for other purposes.

Section 1. Short Title: “Energy Pipeline Research, Development, and Demonstration Act”

Section 2. Findings: Continuing operation of natural gas and hazardous liquid pipelines are vital to the domestic economy and national security. Aging pipelines, unprotected rights-of-way, more frequent accidents and interruptions, terrorist activities as well as the introduction of new generation lines such as hydrogen pose new dilemmas for the industry. A coordinated research, development and demonstration program is needed to develop technologies and methods for addressing these concerns.

Section 3. Requires the Department of Energy, the Department of Transportation, and the National Institute of Standards and Technology to develop and implement a research and development program focused on energy pipeline safety. Requires participating agencies to submit report of activities and capabilities to Congress no later than 6 months after enactment and a 5-year program plan to the Pipeline Integrity Technical Advisory Committee no later than 1 year after enactment. Provides for considerable coordination between participating agencies, state and local governments, and the pipeline industry and advising from a number of outside entities in preparing program plan. Establishes the Pipeline Integrity Technical Advisory Committee (PITAC) to advise and evaluate the program. PITAC shall be composed of 9 members, 3 each appointed by DOE, DOT and NIST under recommendations from the National Academy of Sciences. PITAC members shall be qualified technically and serve without compensation other than travel expenses. PITAC will meet 4 times each year and terminate after the initial 5 years. The participating agencies will submit annual reports on the status of their portion of the program.

Section 4. Requires DOE, DOT and NIST to enter into a memorandum of understanding detailing their roles in this program. DOT shall be responsible for pipeline inspection and information systems surety. DOE shall be responsible for low-volume leak detection and surveillance technologies. NIST shall be responsible for standards and materials research.

Section 5. Authorizes to be appropriated each fiscal year (2002-2006) to:

DOE \$10,000,000
 DOT \$5,000,000
 NIST \$5,000,000

Section 6. Defines “participating agencies” as Department of Energy, Department of Transportation and the National Institute of Standards and Technology.

Chairman BOEHLERT. The first amendment on the roster is an amendment in the nature of a substitute offered by Mr. Hall on behalf of himself and Mr. Smith of Texas. The Clerk will report the amendment.

The CLERK. Amendment to H.R. 3929, offered by Mr. Hall of Texas and Mr. Smith of Texas.

Chairman BOEHLERT. I ask unanimous consent to dispense with the reading. Without objection, so ordered. I now recognize the Ranking Member, the gentleman from Texas, Mr. Hall, for 5 minutes to explain the amendment.

Mr. HALL. Mr. Chairman, thank you, and Members of the Committee. The amendment we are offering today differs in several points from the original. Thanks to a lot of valuable feedback from the witnesses that you and that we together selected to testify for us last week, we have learned several things and made some changes, as much up-to-date changes as we could. In the finding section, we looked to amplify and clarify the scope and intent of the bill. For example, we removed some limiting language and the bill now includes all "energy" pipelines in its scope. Actually, we put an additional provision in the bill that defined energy pipelines as being natural gas, and crude oil, and refined products. That is on the last page, page 9, and includes LNG, and I think it is a good amendment, and I hope it will be accepted.

In the events section, Section 3(a)(2), the substitute further highlights specific technologies for preventing and responding to pipeline failure, and we have noted the importance of R&D, and fire safety, and technology such as smart pigs. You will see that in the write-up or in the report language. These are simply instruments and packages that they run through the pipelines to detect defects and to give other information. It is a device that will detect the abnormalities inside the pipe and outside. And likewise, we have enhanced the security and surveillance provision to address the growing concern of outside threats to our nation's pipeline infrastructure. I think it is a good amendment.

In the activities and capabilities section, we have changed the language some to ensure the agencies take into account research that is done in other agencies and to adjust their efforts accordingly.

So finally, we have added three definitions for energy pipeline, next generation pipeline, and pipeline and various conforming languages changed to accommodate the definitions. You can see the definitions if you need to at the end of the bill there, simply enlarged. I yield back my time.

Chairman BOEHLERT. Is there any further discussion? If not, the vote occurs on the amendment. All in favor say aye. Opposed, no. The ayes have it, and the amendment is agreed to.

[Amendment to H.R. 3929 follows:]

COMMITTEE ON SCIENCE**FULL COMMITTEE MARKUP****March 20, 2002****AMENDMENT ROSTER****H.R. 3929, Energy Pipeline, Research, Development, and Demonstration Act.**

--Motion to adopt the bill, as amended: adopted by a voice vote.

--Motion to report the bill, as amended: adopted by a voice vote.

No.	Sponsor	Description	Results
1.	Mr. Hall, TX Mr. Smith, TX	Amendment In The Nature Of A Substitute to H.R. 3929	Adopted by a voice vote.

F:\TB\SC\PIPSAF01.002

H.L.C.



**AMENDMENT IN THE NATURE OF A SUBSTITUTE
TO H.R. 3929
OFFERED BY MR. HALL OF TEXAS AND MR.
SMITH OF TEXAS**

Strike all after the enacting clause and insert the following:

1 SECTION 1. SHORT TITLE.

2 This Act may be cited as the "Energy Pipeline Re-
3 search, Development, and Demonstration Act".

4 SEC. 2. FINDINGS.

5 The Congress finds that—

6 (1) energy pipelines are a key component of the
7 energy infrastructure of the United States;

8 (2) pipelines can become more susceptible to
9 failure with age;

10 (3) energy pipelines with unprotected rights-of-
11 way and associated above-ground facilities are vul-
12 nerable to terrorist attacks and other disruptions
13 and raise safety concerns;

14 (4) interruptions in service on major pipelines,
15 whether a result of pipeline failure or purposeful ac-
16 tion, can have enormous consequences for the econ-
17 omy and security of the United States;

F:\TB\SC\PIPSAF01.002

H.L.C.

2

1 (5) new energy sources such as hydrogen will
2 require a new generation of pipelines; and

3 (6) a more coordinated research, development,
4 demonstration, and standardization program is need-
5 ed to ensure the use of existing technologies and the
6 development of new technologies to increase the
7 safety and security of these critical facilities.

8 **SEC. 3. PIPELINE INTEGRITY RESEARCH, DEVELOPMENT,**
9 **AND DEMONSTRATION.**

10 (a) ESTABLISHMENT OF COOPERATIVE PROGRAM.—

11 (1) IN GENERAL.—The heads of the partici-
12 pating agencies shall develop and implement a pro-
13 gram of research, development, demonstration, and
14 standardization to ensure the integrity of energy
15 pipelines and next-generation pipelines.

16 (2) ELEMENTS.—The program shall include re-
17 search, development, demonstration, and standard-
18 ization activities related to—

19 (A) materials inspection;

20 (B) stress and fracture analysis, detection
21 of cracks, corrosion, abrasion, and other abnor-
22 malities inside pipelines that lead to pipeline
23 failure, and development of new equipment or
24 technologies that are inserted into pipelines to
25 detect anomalies;

F:\TB\SC\PIPSAF01.002

H.L.C.

3

1 (C) internal inspection and leak detection
 2 technologies, including detection of leaks at very
 3 low volumes;

4 (D) methods of analyzing content of pipe-
 5 line throughput;

6 (E) pipeline security, including improving
 7 the real-time surveillance of pipeline rights-of-
 8 way, developing tools for evaluating and en-
 9 hancing pipeline security and infrastructure, re-
 10 ducing natural, technological, and terrorist
 11 threats, and protecting first response units and
 12 persons near an incident;

13 (F) risk assessment methodology, including
 14 vulnerability assessment and reduction of third-
 15 party damage;

16 (G) communication, control, and informa-
 17 tion systems surety;

18 (H) fire safety of pipelines;

19 (I) improved excavation, construction, and
 20 repair technologies; and

21 (J) other elements the heads of the partici-
 22 pating agencies consider appropriate.

23 (3) ACTIVITIES AND CAPABILITIES REPORT.—

24 Not later than 6 months after the date of the enact-
 25 ment of this Act, the participating agencies shall

F:\TB\SC\PIPSAF01.002

H.L.C.

4

1 transmit to the Congress a report on the existing ac-
2 tivities and capabilities of the participating agencies,
3 including the national laboratories. The report shall
4 include the results of a survey by the participating
5 agencies of any activities of other Federal agencies
6 that are relevant to or could supplement existing re-
7 search, development, demonstration, and standard-
8 ization activities under the program created under
9 this section.

10 (b) PROGRAM PLAN.—

11 (1) IN GENERAL.—Not later than 1 year after
12 the date of the enactment of this Act, the partici-
13 pating agencies shall prepare and transmit to Con-
14 gress a 5-year program plan to guide activities
15 under this section. Such program plan shall be sub-
16 mitted to the Pipeline Integrity Technical Advisory
17 Committee established under subsection (c) for re-
18 view, and the report to Congress shall include the
19 comments of the Advisory Committee. The 5-year
20 program plan shall take into account related activi-
21 ties of Federal agencies that are not participating
22 agencies.

23 (2) CONSULTATION.—In preparing the program
24 plan, the participating agencies shall consult with
25 appropriate representatives of State and local gov-

1 ernment and the private sector, including companies
2 owning energy pipelines and developers of next-gen-
3 eration pipelines, to help establish program prior-
4 ities.

5 (3) ADVICE FROM OTHER ENTITIES.—In pre-
6 paring the program plan, the participating agencies
7 shall also seek the advice of other Federal agencies,
8 utilities, manufacturers, institutions of higher learn-
9 ing, pipeline research institutions, national labora-
10 tories, environmental organizations, pipeline safety
11 advocates, professional and technical societies, and
12 any other appropriate entities.

13 (c) PIPELINE INTEGRITY TECHNICAL ADVISORY
14 COMMITTEE.—

15 (1) ESTABLISHMENT.—The participating agen-
16 cies shall establish and manage a Pipeline Integrity
17 Technical Advisory Committee (in this subsection re-
18 ferred to as the “Advisory Committee”). The Advi-
19 sory Committee shall be established not later than 6
20 months after the date of the enactment of this Act.

21 (2) DUTIES.—The Advisory Committee shall—

22 (A) advise the participating agencies on
23 the development and implementation of the pro-
24 gram plan prepared under subsection (b); and

1 (B) have a continuing role in evaluating
2 the progress and results of research, develop-
3 ment, demonstration, and standardization ac-
4 tivities carried out under this section.

5 (3) MEMBERSHIP.—

6 (A) APPOINTMENT.—The Advisory Com-
7 mittee shall be composed of—

8 (i) 3 members appointed by the Sec-
9 retary of Energy;

10 (ii) 3 members appointed by the Sec-
11 retary of Transportation; and

12 (iii) 3 members appointed by the Di-
13 rector of the National Institute of Stand-
14 ards and Technology.

15 In making appointments, the participating
16 agencies shall seek recommendations from the
17 National Academy of Sciences.

18 (B) QUALIFICATIONS.—Members ap-
19 pointed to the Advisory Committee shall have
20 experience or be technically qualified, by train-
21 ing or knowledge, in the operations of the pipe-
22 line industry, and have experience in the re-
23 search and development of pipeline or related
24 technologies.

F:\TB\SC\PIPSAF01.002

H.L.C.

7

1 (C) COMPENSATION.—The members of the
 2 Advisory Committee shall serve without com-
 3 pensation, but shall receive travel expenses, in-
 4 cluding per diem in lieu of subsistence, in ac-
 5 cordance with sections 5702 and 5703 of title
 6 5, United States Code.

7 (4) MEETINGS.—The Advisory Committee shall
 8 meet at least 4 times each year.

9 (5) TERMINATION.—The Advisory Committee
 10 shall terminate 5 years after its establishment.

11 (d) REPORTS TO CONGRESS.—Not later than 1 year
 12 after the date of the enactment of this Act, and annually
 13 thereafter, the participating agencies shall each transmit
 14 to the Congress a report on the status and results to date
 15 of the implementation of their portion of the program plan
 16 prepared under subsection (b).

17 **SEC. 4. MEMORANDUM OF UNDERSTANDING.**

18 Not later than 120 days after the date of the enact-
 19 ment of this Act, the participating agencies shall enter
 20 into a memorandum of understanding detailing their re-
 21 spective responsibilities under this Act, consistent with the
 22 activities and capabilities identified under section 3(a)(3).
 23 Each of the participating agencies shall have the primary
 24 responsibility for ensuring that the elements of the pro-
 25 gram plan within its jurisdiction are implemented in ac-

1 cordance with this Act. The Department of Transpor-
 2 tation's responsibilities shall reflect its expertise in pipe-
 3 line inspection and information systems surety. The De-
 4 partment of Energy's responsibilities shall reflect its ex-
 5 pertise in low-volume leak detection and surveillance tech-
 6 nologies. The National Institute of Standards and Tech-
 7 nology's responsibilities shall reflect its expertise in stand-
 8 ards and materials research.

9 **SEC. 5. AUTHORIZATION OF APPROPRIATIONS.**

10 There are authorized to be appropriated—

- 11 (1) to the Secretary of Energy \$10,000,000;
- 12 (2) to the Secretary of Transportation
- 13 \$5,000,000; and
- 14 (3) to the National Institute of Standards and
- 15 Technology \$5,000,000,

16 for each of the fiscal years 2003 through 2007 for ear-
 17 nying out this Act.

18 **SEC. 6. DEFINITIONS.**

19 For purposes of this Act—

- 20 (1) the term “energy pipeline” means a pipeline
- 21 system used in the transmission or local distribution
- 22 of natural gas (including liquefied natural gas),
- 23 crude oil, or refined petroleum products;
- 24 (2) the term “next-generation pipeline” means
- 25 a transmission or local distribution pipeline system

F:\TB\SC\PIPSAF01.002

H.L.C.

9

1 designed to transmit energy or energy-related prod-
2 ucts, in liquid or gaseous form; other than energy
3 pipelines;

4 (3) the term "participating agencies" means the
5 Department of Energy, the Department of Trans-
6 portation, and the National Institute of Standards
7 and Technology; and

8 (4) the term "pipeline" means an energy pipe-
9 line or a next-generation pipeline.

H. R. 3929 – Energy Pipeline Research, Development and Demonstration Act

Changes Contained in the Substitute Amendment

At the markup tomorrow, Congressmen Ralph Hall and Lamar Smith will offer an amendment in the form of a substitute to H.R. 3929. The amendment incorporates the best recommendations of the witnesses at last week's hearing, other written comments and consultations with other interested parties.

The overall thrust of the bill has not changed. Suggestions of several commentators have been adopted to make the bill more robust, especially in Section 3(a)(2) that contains the elements of the research, development and demonstration program. The substitute also clarifies that the RD&D program includes advances related to both traditional energy pipelines as well as next generation" pipelines. (Section 6 under the Hall/Smith substitute defines energy pipelines to include those used in transmission or local distribution of natural gas including liquefied natural gas, crude oil, or refined petroleum products, defined next-generation pipelines to include any pipeline carrying energy or energy related products other than natural gas, crude oil or refined petroleum products, and defined pipelines to include both energy and next-generation pipelines.)

Finally, several changes are made in Section 2-Findings, to clarify the scope of the bill, amplify and clarify the intent of the provisions.

The following is a breakdown of significant language changes (other than technical and conforming amendments) from H.R.3929 as introduced to the Amendment in the Nature of a Substitute to H.R.3929 offered by Hon. Ralph M. Hall and Hon. Lamar Smith.

In section 2 Findings

- **Finding (1)** is clarified by referencing "energy pipelines".
- **Finding (2)** was changed to be less definitive. The new text states that pipelines *can* become more susceptible to failure with age.
- **Finding (3)** replaced "*facilities*" with "*pipelines*" and added "*and associated above-ground facilities*". The same finding is expanded to express safety concerns for those living near pipelines or responding to pipeline incidents.

In Section 3. Pipeline Integrity Research, Development, and Demonstration

- Under (2) **Elements** (of the research program) subheading
 1. **Element (B)** is expanded to call for the "*development of new equipment or technologies that are inserted into pipelines to detect anomalies*".
 2. **Element (C)** is expanded to include the development of new "*internal inspection*" techniques.
 3. **Element (D)** no longer includes "*Flow metering*".

4. **Element (E)** added “*real-time*” to describe “surveillance” and is expanded to include “*developing tools for evaluating and enhancing pipeline security and infrastructure, reducing natural, technological, and terrorist threats, and protecting first response units and persons near an incident.*”
 5. **Element (G)** replaced “*information systems surety; and*” with “*communication, control, and information systems surety;*”
 6. Two new elements were added: **(H)** *fire safety of pipelines* and **(I)** *improved excavation, construction, and repair technologies.*
- **Subheading (a)(3) Activities and Capabilities Report** after “*laboratories*” the words “*and any*” are replaced with “. *The report shall include the results of a survey by the participating agencies of any activities of*” This will require the three participating agencies to learn what is happening in other agencies that relates to their work under this Act and to adjust the research efforts accordingly.

In **Section 6 Definitions** added definitions for

- (1) the term “energy-pipeline” means any pipeline system used in the transmission or local distribution of natural gas including liquefied natural gas, crude oil, or refined petroleum products.
(Various conforming changes were made to accommodate this definition)
- (2) the term “next-generation pipeline” means a transportation or distribution pipeline system designed to transmit energy or energy-related products in liquid or gaseous form other than crude oil, natural gas, and refined petroleum products.
- (3) the term “pipeline” means either energy pipeline or next-generation pipeline.

Chairman BOEHLERT. Are there any further amendments? Hearing none, the question is on the bill H.R. 3929, the Energy Pipeline Research, Development, and Demonstration Act. All in favor will say aye. Opposed, no. In the opinion of the Chair, the ayes have it. I will now recognize Mr. Hall for a motion.

Mr. HALL. Mr. Chairman, I move that the Committee favorably report H.R. 3929 as amended to the House with the recommendation that the bill as amended do pass. Furthermore, I move that the staff be instructed to prepare the legislative report and make necessary technical and conforming changes, and that the Chairman take all necessary steps to bring the bill before the House for consideration sooner rather than later.

Chairman BOEHLERT. Any questions on the motion to report the bill favorably? Those in favor of the motion will signify by saying aye. Opposed, no. The ayes appear to have it, and the bill is favorably reported. I move that members have two subsequent calendar days in which to submit supplemental minority or additional views on the measure. Without objection so ordered. I move pursuant to Clause 1 of Rule 22 of the Rules of the House of Representatives that the Committee authorize the Chairman to offer such motions as may be necessary in the House to go to conference with the Senate on the bill H.R. 3929 or a similar Senate bill. Without objection, so ordered.

That concludes the Committee markup.

[Whereupon, at 11:08 a.m., the Committee proceeded to other business.]