

Calendar No. 568

115TH CONGRESS }
2d Session }

SENATE

{ REPORT
{ 115-336

NATIONAL EARTHQUAKE HAZARDS REDUC-
TION PROGRAM REAUTHORIZATION ACT OF
2017

R E P O R T

OF THE

COMMITTEE ON COMMERCE, SCIENCE, AND
TRANSPORTATION

ON

S. 1768



SEPTEMBER 6, 2018.—Ordered to be printed

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SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ONE HUNDRED FIFTEENTH CONGRESS

SECOND SESSION

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NATIONAL EARTHQUAKE HAZARDS REDUCTION PROGRAM REAUTHORIZATION ACT OF 2017

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Mr. THUNE, from the Committee on Commerce, Science, and
Transportation, submitted the following

R E P O R T

[To accompany S. 1768]

[Including cost estimate of the Congressional Budget Office]

The Committee on Commerce, Science, and Transportation, to which was referred the bill (S. 1768) to reauthorize and amend the National Earthquake Hazards Reduction Program, and for other purposes, having considered the same, reports favorably thereon with an amendment (in the nature of a substitute) and recommends that the bill (as amended) do pass.

PURPOSE OF THE BILL

The purpose of S. 1768, as reported, is to authorize various seismological research and warning systems, including those under the National Earthquake Hazards Reduction Program (NEHRP).

BACKGROUND AND NEEDS

The NEHRP is a multi-disciplinary and interagency program created under the Earthquake Hazards Reduction Act of 1977 (EHRA)¹ which celebrated its 40th anniversary on October 7, 2017. It was created to facilitate private research, planning, decision-making, and mitigation efforts related to seismic activity. Although the NEHRP has received 11 authorizations from Congress, the program has been operating without authorization since fiscal year

¹ Earthquake Hazards Reduction Act of 1977 (42 U.S.C. 7701 et seq.).

(FY) 2009,² which has weakened its effectiveness. For example, stakeholders have noted there has been a drop-off in interagency coordination, and certain agency grants under the program have not been awarded.

The following four agencies contribute to the NEHRP: the National Institute of Standards and Technology (NIST), which is the lead agency and responsible for NEHRP planning and coordination; the Federal Emergency Management Agency (FEMA), which promotes the implementation of research results and best practices as well as earthquake preparedness, response, and public awareness efforts; the National Science Foundation (NSF), which supports seismology and other geological research; and the United States Geological Survey (USGS), which provides earthquake monitoring and notification services in addition to post-earthquake investigations and other research. The enacted NEHRP budgets for these agencies totaled \$138.9 million in FY 2017.³ The Trump administration's budget request for FY 2018 totaled \$124.1 million.⁴

While it has been decades since a major earthquake has struck an urban area of the United States, the cost and national impact of such an earthquake could be devastating. Experts predict that a single major earthquake in California, the Pacific Northwest, the western and central United States, or parts of the Atlantic seaboard, could result in \$100 billion to \$150 billion in damages.⁵ This risk is due in part to significant population growth and urban development in earthquake-prone regions of the country, the vulnerability of older buildings and infrastructure, and the increased interdependency and interconnectedness of society and the economy.⁶ Describing the scale of the exposure, experts cite that half of the U.S. population and \$59 trillion in building-related assets are located in portions of 42 States that could experience damaging ground shaking levels within the next 50 years.⁷

SUMMARY OF PROVISIONS

If enacted, S. 1768, as reported, would do the following:

- Reauthorize NIST as the lead agency of the NEHRP.
- Require annual meetings of the Interagency Coordinating Committee (ICC) instead of three times per year.
- Require the ICC report every 2 years instead of annually.
- Change data sharing requirements between agencies and improve coordination between Federal and State agencies in the case of an earthquake disaster.
- Require the NSF, to the extent practicable, to specifically note in any notice of program funding or other grant announcement that the funds used are part of the NEHRP, and to track

²National Earthquake Hazard Reduction Program Reauthorization Act of 2004, P.L. 108–360; 118 Stat. 1668.

³National Earthquake Hazards Reduction Program, 2005–2017 NEHRP Agency Budgets, accessed on December 7, 2017 (http://www.nehrp.gov/pdf/2005-2017_NEHRP_Agency_Budgets_for_website_15Aug2017.pdf). Specifically, NIST contributed \$5.2 million, FEMA contributed \$8.5 million, NSF contributed \$54.2 million, and USGS contributed \$67 million in FY16.

⁴National Earthquake Hazard Reduction Program, 2018 Requested Funding for NEHRP Agencies, accessed on December 8, 2017 (http://www.nehrp.gov/pdf/2018_Requested_Funding_for_NEHRPAgencies_15Aug2017.pdf).

⁵Advisory Committee on Earthquake Hazards Reduction, “Effectiveness of the National Earthquake Hazards Reduction Program” (September 2017) (http://www.nehrp.gov/pdf/ACEHR%20report_11Sept2017.pdf).

⁶*Id.*

⁷*Id.*

spending on research that would contribute to all aspects of earthquake science.

- Explicitly authorize the USGS to issue earthquake warnings and other earthquake awareness products, and update language on the Advanced National Seismic System (ANSS).
- Direct FEMA to return to a directly-funded, State-based program for earthquake risk mitigation, planning, education, and preparedness efforts.
- Remove or update outdated statutory language, including references to earthquake prediction, seismic systems that are no longer operational, and outdated authorization levels.
- Direct the completion of a comprehensive assessment of the Nation’s earthquake risk reduction process, as called for by the Advisory Committee on Earthquake Hazards Reduction in its 2015 report.
- Convene a group of experts to examine buildings and critical infrastructure.
- Provide authorizations of appropriations for FY 2018 through FY 2022.

LEGISLATIVE HISTORY

S. 1768 was introduced on September 6, 2017, by Senator Feinstein (for herself and Senators Cantwell, Gardner, Harris, Merkley, Murkowski, Murray, and Wyden). Senators Heinrich and Sullivan are also cosponsors of the bill. On December 13, 2017, the Committee met in open Executive Session and, by voice vote, ordered S. 1768 reported favorably with an amendment (in the nature of a substitute).

Senator Gardner offered a substitute amendment, which made several changes to the bill, including the addition of a 5-year authorization of appropriations from FY 2018 through FY 2022.

ESTIMATED COSTS

In accordance with paragraph 11(a) of rule XXVI of the Standing Rules of the Senate and section 403 of the Congressional Budget Act of 1974, the Committee provides the following cost estimate, prepared by the Congressional Budget Office:

S. 1768—National Earthquake Hazards Reduction Program Reauthorization Act of 2017

Summary: S. 1768 would amend the Earthquake Hazards Reduction Act of 1977 to make changes to the National Earthquake Hazards Reduction Program (NEHRP), an interagency program focused on reducing earthquake-related risks to life and property. The bill would authorize the appropriation of \$735 million over the 2018–2022 period for the United States Geological Survey (USGS), the National Science Foundation (NSF), the Federal Emergency Management Agency (FEMA), and the National Institute of Standards and Technology (NIST) to continue the program.

Assuming appropriation of the authorized amounts, CBO estimates that implementing S. 1768 would cost \$596 million over the 2018–2022 period. Enacting the bill would not affect direct spending or revenues; therefore, pay-as-you-go procedures do not apply.

CBO estimates that enacting S. 1768 would not increase net direct spending or on-budget deficits in any of the four consecutive 10-year periods beginning in 2028.

S. 1768 contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act (UMRA).

Estimated cost to the Federal Government: The estimated budgetary effect of S. 1768 is shown in the following table. The costs of this legislation fall within budget functions 250 (general science, space, and technology), 300 (natural resources and environment), 370 (commerce and housing credit), and 450 (community and regional development).

	By fiscal year, in millions of dollars—					2018– 2022
	2018	2019	2020	2021	2022	
INCREASES IN SPENDING SUBJECT TO APPROPRIATION						
United States Geological Survey:						
Authorization Level	72	74	75	76	78	376
Estimated Outlays	21	21	21	21	21	363
National Science Foundation:						
Authorization Level	55	56	57	58	60	287
Estimated Outlays	10	31	43	50	53	186
Federal Emergency Management Agency:						
Authorization Level	9	9	9	9	9	45
Estimated Outlays	1	2	4	6	8	20
National Institute of Standards and Technology:						
Authorization Level	5	5	6	6	6	28
Estimated Outlays	4	5	6	6	6	27
Total Changes:						
Authorization Level	141	144	147	149	153	735
Estimated Outlays	79	108	126	137	145	596

Components do not sum to totals because of rounding.

Basis of estimate: For this estimate, CBO assumes that S. 1768 will be enacted near the beginning of calendar year 2018 and that the authorized amounts will be appropriated for each year. Estimated outlays are based on historical spending patterns for this program.

NEHRP is a nationwide program that aims to reduce risks to life and property in the United States that result from earthquakes. The main goals of the program include:

- Developing effective practices and policies for earthquake loss reduction and accelerating their implementation,
- Improving techniques for reducing the earthquake vulnerabilities of facilities and systems,
- Improving earthquake hazard identification and risk assessment methods, and
- Improving the understanding of earthquakes and their effects.

In 2017, \$139 million was allocated to NEHRP. The bill would authorize the appropriation of \$735 million over the 2018–2022 period for USGS, NSF, FEMA, and NIST to continue the program. CBO estimates that implementing S. 1768 would cost \$596 million over the 2018–2022 period and \$139 million in years after 2022.

Pay-As-You-Go considerations: None.

Increase in long-term direct spending and deficits: CBO estimates that enacting S. 1768 would not increase net direct spending or on-budget deficits in any of the four consecutive 10-year periods beginning in 2028.

Mandates: S. 1768 contains no intergovernmental or private-sector mandates as defined in UMRA.

Estimate prepared by: Federal Costs: Robert Reese; Mandates: Jon Sperl.

Estimate approved by: H. Samuel Papenfuss, Deputy Assistant Director for Budget Analysis.

REGULATORY IMPACT STATEMENT

In accordance with paragraph 11(b) of rule XXVI of the Standing Rules of the Senate, the Committee provides the following evaluation of the regulatory impact of the legislation, as reported:

NUMBER OF PERSONS COVERED

The Committee does not anticipate a change in the number of individuals and businesses covered under the existing NEHRP as a result of this legislation because the bill's program updates would primarily focus on improving the administrative and interagency coordination efforts of Federal agencies.

ECONOMIC IMPACT

The Committee anticipates a positive economic impact from this legislation given that the bill would focus on improving earthquake risk mitigation, planning, education, and preparedness efforts.

PRIVACY

The Committee does not anticipate a detrimental impact on the personal privacy of individuals as a result of this legislation because the bill's updates would primarily focus on improving the administrative and interagency coordination efforts of Federal agencies.

PAPERWORK

The Committee does not anticipate a significant increase in paperwork burdens resulting from this legislation because there would not be any significant paperwork requirements added to the existing NEHRP.

CONGRESSIONALLY DIRECTED SPENDING

In compliance with paragraph 4(b) of rule XLIV of the Standing Rules of the Senate, the Committee provides that no provisions contained in the bill, as reported, meet the definition of congressionally directed spending items under the rule.

SECTION-BY-SECTION ANALYSIS

Section 1. Short title; table of contents.

This section would provide that the Act may be cited as the "National Earthquake Hazards Reduction Program Reauthorization Act of 2017."

Section 2. Modifications of findings and purpose.

This section would modify the congressional findings and purposes of the EHRA to direct the NEHRP to increase the resilience

of communities and reduce the adverse effects of earthquakes to individuals and communities. This section would add Oregon and Tennessee to the list of States explicitly cited in the findings section as having major or moderate seismic risk. This section also would add a new finding on the durability of the built environment and general lack of its suitability for operational use post-earthquake. This section would add another new finding highlighting the results of a 2011 National Research Council report, which called for 18 tasks focused on research, preparedness, and mitigation, as well as proposing an estimated annual funding to improve national earthquake resilience.⁸

Section 3. Modification of National Earthquake Hazards Reduction Program.

This section would add mapping of active faults and folds, liquefaction susceptibility, and susceptibility for earthquake-induced landslides and other hazards to the activities of the NEHRP. It would clarify that the Director of the ICC is a member of the ICC, and would require the ICC to develop and consistently update a strategic plan and a management plan for the program. The ICC would be required to develop an interagency budget to be submitted to the Office of Management and Budget, develop memorandums of understanding with relevant Federal agencies on data sharing and resource commitment, and enhance coordination with other Federal departments and agencies, including the National Oceanic and Atmospheric Administration, the National Aeronautics and Space Administration, the Department of Agriculture, the Department of the Interior, the Department of Transportation, and the Department for Housing and Urban Development.

This section would update the responsibilities for the agencies administering the NEHRP, including to emphasize NIST's role in research and development to improve community resilience through building codes and standards, and practices for structures and lifelines. This section would reemphasize FEMA's role in continuing to operate a State grant program with a 25 percent cost-share provided by each State; to support a comprehensive earthquake education, outreach, and awareness program; to work on performance-based design features; and to enter into agreements related to demonstration projects. This section would clarify the authority of the USGS to issue earthquake early warnings and add a reporting requirement for NSF to ensure, to the extent practicable, that the program is noted in announcements for funding and that research awards are tracked. FEMA and the USGS would be required to increase coordination with the Director of NIST.

Section 4. Review of risks posed by earthquakes to the United States.

This section would require the Government Accountability Office to undertake a review of the effectiveness of the NEHRP and to identify gaps in the national earthquake risk reduction strategy. The review would include an examination of the risks and hazards posed to the United States from earthquakes, the effectiveness of

⁸National Research Council, National Earthquake Resilience: Research, Implementation, and Outreach, (2011) accessed on December 8, 2017 (<https://www.nap.edu/catalog/13092/national-earthquake-resilience-research-implementation-and-outreach>).

NIST and FEMA in resiliency plan adoption, the progress made by NIST and the ICC related to NEHRP coordination and program success, the adoption of recommendations by governments and communities, the extent that research has led to action, and what legislative or administrative action may be appropriate to improve both the NEHRP and resiliency in general. A report on the review would be required to be completed and submitted to Congress no later than 3 years after the date of enactment of this Act.

Section 5. Seismic standards.

This section would require NIST and FEMA to jointly convene a committee of experts to review existing building design features and recommend options for improving the built environment. This section also would require a report on that committee’s findings to be completed and submitted to Congress no later than June 30, 2020.

Section 6. Management plan for Advanced National Seismic System.

This section would require, no later than 1 year after the date of enactment of the bill, the USGS to complete a 5-year management plan of the ANSS. This section also would require the plan to include strategies to continue development of an earthquake early warning system, an approach to securing partnerships with State and regional earthquake monitoring entities, a plan to encourage and support the integration of geospatial data products into earthquake monitoring systems, and a plan to include diverse and active leadership of the ANSS.

Section 7. Authorization of appropriations.

This section would amend section 12 of the EHRA⁹ to include authorizations of appropriations at NIST, FEMA, the NSF, and the USGS for FY 2018 through FY 2022.

Section 8. Technical corrections.

This section would make technical corrections, such as replacing incorrect references to the “Director” of FEMA with the accurate title of “Administrator” and simplifying language relating to the ANSS.

CHANGES IN EXISTING LAW

In compliance with paragraph 12 of rule XXVI of the Standing Rules of the Senate, 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 material is printed in italic, existing law in which no change is proposed is shown in roman):

⁹42 U.S.C. 7706.

EARTHQUAKE HAZARDS REDUCTION ACT OF 1977

[42 U.S.C. 7701 et seq.]

SEC. 2. CONGRESSIONAL FINDINGS.

[42 U.S.C. 7701]

(1) All 50 States are vulnerable to the hazards of earthquakes, and at least 39 of them are subject to major or moderate seismic risk, including Alaska, California, Hawaii, Illinois, Massachusetts, Missouri, Montana, Nevada, New Jersey, New York, *Oregon*, South Carolina, *Tennessee*, Utah, and Washington. A large portion of the population of the United States lives in areas vulnerable to earthquake hazards.

(2) Earthquakes have caused, and can cause in the future, enormous loss of life, injury, destruction of property, and economic and social disruption. With respect to future earthquakes, such loss, destruction, and disruption can be substantially reduced through the development and implementation of earthquake hazards reduction measures, including (A) improved design and construction methods and practices, (B) land-use controls and redevelopment, (C) [prediction techniques and] early-warning systems, (D) coordinated emergency preparedness plans, and (E) public education and involvement programs

(3) An expertly staffed and adequately financed earthquake hazards reduction program, based on Federal, State, local, and private research, planning, decisionmaking, and contributions would reduce the risk of such loss, destruction, and disruption in seismic areas by an amount far greater than the cost of such program.

[(4) A well-funded seismological research program in earthquake prediction could provide data adequate for the design, of an operational system that could predict accurately the time, place, magnitude, and physical effects of earthquakes in selected areas of the United States.]

(4) A well-funded seismological research program could provide the scientific understanding needed to fully implement an effective earthquake early warning system.

(5) The geological study of active faults and features can reveal how recently and how frequently major earthquakes have occurred on those faults and how much risk they pose. Such long-term seismic risk assessments are needed in virtually every aspect of earthquake hazards management, whether emergency planning, public regulation, detailed building design, insurance rating, or investment decision.

(6) The vulnerability of buildings, [lifelines] *lifeline infrastructure*, public works, and industrial and emergency facilities can be reduced through proper earthquake resistant design and construction practices. The economy and efficacy of such procedures can be substantially increased through research and development.

(7) Programs and practices of departments and agencies of the United States are important to the communities they serve; some functions, such as emergency communications and national defense, and [lifelines] *lifeline infrastructure*, such as dams, bridges, and public works, must remain in service dur-

ing and after an earthquake. Federally owned, operated, and influenced structures and **lifelines** *lifeline infrastructure* should serve as models for how to reduce and minimize hazards to the community.

(8) * * *

(12) *The built environment has generally been constructed and maintained to meet the needs of the users under normal conditions. When earthquakes occur, the built environment is generally designed to prevent severe injuries or loss of human life and is not expected to remain operational or able to recover under any specified schedule.*

(13) *The National Research Council published a study on reducing hazards and risks associated with earthquakes based on the goals and objectives for achieving national earthquake resilience described in the strategic plan entitled "Strategic Plan for the National Earthquake Hazards Reduction Program". The study and an accompanying report called for work in 18 tasks focused on research, preparedness, and mitigation and annual funding of approximately \$300,000,000 per year for 20 years.*

SEC. 3. CONGRESSIONAL STATEMENT OF PURPOSE.

[42 U.S.C. 7702]

It is the purpose of the Congress in this Act to reduce the risks of life and property from future earthquakes *and increase the resilience of communities* in the United States through the establishment and maintenance of an effective earthquake hazards reduction program. The objectives of such program shall include—

(1) the education of the public, including State and local officials, as to earthquake phenomena, the identification of locations and structures which are especially susceptible to earthquake damage, ways to reduce the adverse consequences of an earthquake *to individuals and the communities*, and related matters;

(2) the development of technologically and economically feasible design and construction methods and procedures to make new and existing structures, in areas of seismic risk, earthquake resistant, giving priority to the development of such methods and procedures for power generating plants, dams, hospitals, schools, public utilities and other **lifelines** *lifeline infrastructure*, public safety structures, high occupancy buildings, and other structures which are especially needed **in time of disaster** *to facilitate community-wide post-earthquake recovery and in times of disaster*;

(3) the implementation to the greatest extent practicable, in all areas of high or moderate seismic risk, of a system (including personnel, technology, and procedures) **for predicting damaging earthquakes and** for identifying, evaluating, and accurately characterizing seismic hazards;

(4) the development, publication, and promotion, in conjunction with State and local officials and professional organizations, of model building *and planning* codes and other means to encourage consideration of information about seismic risk in making decisions about land-use policy and construction activity;

(5) the development, in areas of seismic risk, of improved understanding of, and capability with respect to, earthquake-re-

lated issues, including methods of mitigating the risks from earthquakes, planning to prevent such risks, disseminating warnings of earthquakes, organization emergency services, and planning for **[reconstruction]** *re-occupancy, recovery, reconstruction*, and redevelopment after an earthquake;

(6) the development of ways to increase the use of existing scientific and engineering knowledge to mitigate earthquake hazards; and

(7) the development of ways to assure the availability of affordable earthquake insurance.

SEC. 4. DEFINITIONS.

[42 U.S.C. 7703]

As used in this Act, unless the context otherwise requires:

(1) The term “includes” and variants thereof should be read as if the phrase “but is not limited to” were also set forth.

(2) The term “Program” means the National Earthquake Hazards Reduction Program established under section 5;

(3) The term “seismic” and variants thereof mean having to do with, or caused by earthquakes.

(4) The term “State” means each of the States of the United States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Commonwealth of the Mariana Islands, and any other territory or possession of the United States.

(5) The term “United States” means, when used in a geographical sense, all of the States as defined in section 4(4).

(6) The term “**[lifelines]** *lifeline infrastructure*” means public works and utilities, including transportation facilities and infrastructure, oil and gas pipelines, electrical power and communication facilities and infrastructure, and water supply and sewage treatment facilities.

(7) The term “Program agencies” means the Federal Emergency Management Agency, the United States Geological Survey, the National Science Foundation, and the National Institute of Standards and Technology.

(8) The term “Interagency Coordinating Committee” means the Interagency Coordinating Committee on Earthquake Hazards Reduction established under section 5(a).

(9) The term “Advisory Committee” means the Advisory Committee established under section 5(a)(5)

(10) *The term “community resilience” means the ability of a community to prepare and plan for, absorb, recover from, and more successfully adapt to adverse seismic events.*

SEC. 5. NATIONAL EARTHQUAKE HAZARDS REDUCTION PROGRAM.

[42 U.S.C. 7704]

(a) ESTABLISHMENT.—

(1) IN GENERAL.—There is established the National Earthquake Hazards Reduction Program.

(2) PROGRAM ACTIVITIES.—The activities of the Program shall be designed to—

(A) develop effective measures for earthquake hazards reduction;

(B) promote the adoption of earthquake hazards reduction measures by Federal, State, and local governments,

national standards and model code organizations, architects and engineers, building owners, and others with a role in planning and constructing buildings, structures, and **lifelines** *lifeline infrastructure* through—

(i) grants, contracts, cooperative agreements, and technical assistance;

(ii) development of standards, guidelines, and voluntary consensus codes for earthquake hazards reduction for buildings, structures, and **lifelines** *lifeline infrastructure*;

(iii) development and maintenance of a repository of information, including technical data, on seismic risk, *community resilience*, and hazards reduction; and

(iv) *publishing a systematic set of maps of active faults and folds, liquefaction susceptibility, susceptibility for earthquake induced landslides, and other seismically induced hazards; and*

(C) improve the understanding of earthquakes and their effects on communities, buildings, structures, and **lifelines** *lifeline infrastructure*, through interdisciplinary research that involves engineering, natural sciences, and social, economic, and decisions sciences; and

(D) **develop, operate, and maintain an Advanced National Seismic Research and Monitoring System established under section 13 of the Earthquake Hazards Reduction Act of 1977 (42 U.S.C. 7707), the George E. Brown, Jr. Network for Earthquake Engineering Simulation established under section 14 of that Act (42 U.S.C. 7708),** *continue the development of the Advanced National Seismic System, including earthquake early warning capabilities and the Global Seismographic Network.*

(3) INTERAGENCY COORDINATING COMMITTEE ON EARTHQUAKE HAZARDS REDUCTION.—

(A) **IN GENERAL.**—There is established an Interagency Coordinating Committee on Earthquake Hazards Reduction chaired by the Director of the National Institute of Standards and Technology (referred to in this subsection as the “Director”).

(B) **MEMBERSHIP.**—**The committee** *In addition to the Director, the committee shall be composed of* **the directors of**—

(i) *the Administrator of the Federal Emergency Management Agency;*

(ii) *the Director of the United States Geological Survey;*

(iii) *the Director of the National Science Foundation;*

(iv) *the Director of the Office of Science and Technology Policy; and*

(v) *the Director of the Office of Management and Budget.*

(C) **MEETINGS.**—The Committee shall meet **not less than 3 times a year** *not less frequently than once each year at the call of the Director.*

(D) PURPOSE AND DUTIES.—The Interagency Coordinating Committee shall oversee the planning, manage-

ment, and coordination of the Program. The Interagency Coordinating Committee shall—

[(i) develop, not later than 6 months after the date of enactment of the National Earthquake Hazards Reduction Program Reauthorization Act of 2004 and update periodically—

[(I) a strategic plan that establishes goals and priorities for the Program activities described under subsection (a)(2); and

[(II) a detailed management plan to implement such strategic plan; and

[(ii) develop a coordinated interagency budget for the Program that will ensure appropriate balance among the Program activities described under subsection (a)(2), and, in accordance with the plans developed under clause (i), submit such budget to the Director of the Office of Management and Budget at the time designated by that office for agencies to submit annual budgets.]]

(D) DUTIES.—

(i) *GENERAL DUTY.—The Interagency Coordinating Committee shall oversee the planning, management, and coordination of the Program.*

(ii) *SPECIFIC DUTIES.—The duties of the Interagency Coordinating Committee include the following:*

(I) *Developing, not later than 6 months after the date of the enactment of the National Earthquake Hazards Reduction Program Reauthorization Act of 2004 and updating periodically—*

(aa) *a strategic plan that establishes goals and priorities for the Program activities described under subsection (a)(2); and*

(bb) *a detailed management plan to implement such strategic plan.*

(II) *Developing a coordinated interagency budget for the Program that will ensure appropriate balance among the Program activities described under subsection (a)(2), and, in accordance with the plans developed under subclause (I), submitting such budget to the Director of the Office of Management and Budget at the time designated by the Director for agencies to submit biennial budgets.*

(III) *Developing interagency memorandums of understanding with any relevant Federal agencies on data sharing and resource commitment in the event of an earthquake disaster.*

(IV) *Coordinating with the Administrator of the National Aeronautics and Space Administration and the Administrator of the National Oceanic and Atmospheric Administration on data sharing and resource allocation to ensure judicious use of Government resources and the free-flowing exchange of information related to earthquakes.*

(V) *Coordinating with the Secretary of Agriculture and the Secretary of the Interior on the use*

of public lands for earthquake monitoring and research stations, and related data collection.

(VI) Coordinating with the Secretary of Transportation and the Secretary of Housing and Urban Development on the effects of earthquakes on transportation and housing stocks.

(iii) ASSISTANCE FROM SECRETARY OF AGRICULTURE AND SECRETARY OF THE INTERIOR.—To the extent practicable, the Secretary of Agriculture and the Secretary of the Interior shall expedite any request for a permit to use public land under clause (ii)(V).

(4) **【ANNUAL】 BIENNIAL REPORT.—【The Interagency Coordinating Committee shall transmit, at the time of the President’s budget request to Congress, an annual report to the Committee on Science and the Committee on Resources of the House of Representatives, and the Committee on Commerce, Science, and Transportation of the Senate】**

(A) IN GENERAL.—Not less frequently than once every two years, the Interagency Coordinating Committee shall submit to the Committee on Commerce, Science, and Transportation, the Committee on Energy and Natural Resources, and the Committee on Homeland Security and Governmental Affairs of the Senate and the Committee on Energy and Commerce, the Committee on Natural Resources, and the Committee on Homeland Security of the House of Representatives a report on the Program. Such report shall include—

【(A)】(i) the Program budget for the current fiscal year for each agency that participates in the Program, and for each major goal established for the Program activities under **【subparagraph (3)(A)】 paragraph (3)(D)(i)(I)**;

【(B)】(ii) the proposed Program budget for the next fiscal year for each agency that participates in the Program, and for each major goal established for the Program activities under **【subparagraph (3)(A)】 paragraph (3)(D)(i)(I)**;

【(C)】(iii) a description of the activities and results of the Program during the previous year, including an assessment of the effectiveness of the Program in furthering the goals established in the strategic plan **【under (3)(A)】 under paragraph (3)(D)(i)(I)**;

【(D)】(iv) a description of the extent to which the Program has incorporated the recommendations of the Advisory Committee;

【(E)】(v) a description of activities, including budgets for the current fiscal year and proposed budgets for the next fiscal year, that are carried out by Program agencies and contribute to the Program, but are not included in the Program **【; and】**;

【(F)】(vi) a description of the activities, including budgets for the current fiscal year and proposed budgets for the following fiscal year, related to the grant program carried out under subsection (b)(2)(A)(i) **【.】**; and

(vii) a statement regarding whether the Administrator of the Federal Emergency Management Agency

has lowered or waived the cost share requirement for assistance provided under subsection (b)(2)(A)(i).

(B) SUPPORT FOR PREPARATION OF REPORT.—Each head of a Program agency shall submit to the Director of the National Institute of Standards and Technology such information as the Director may request for the preparation of a report under subparagraph (A) not later than 90 days after the date on which the Director requests such information.¹

(5) ADVISORY COMMITTEE.—

(A) IN GENERAL.—The Director shall establish an Advisory Committee on Earthquake Hazards Reduction of at least 11 members, none of whom may be an employee (as defined in subparagraphs (A) through (F) of section 7342(a)(1) of title 5, United States Code, including representatives of research and academic institutions, industry standards development organizations, State and local government, and financial communities who are qualified to provide advice on earthquake hazards reduction and represent all related scientific, architectural, and engineering disciplines. The recommendations of the Advisory Committee shall be considered by Federal agencies in implementing the Program.

(B) ASSESSMENT.—The Advisory Committee shall assess—

- (i) trends and developments in the science and engineering of earthquake hazards reduction;
- (ii) effectiveness of the Program in carrying out the activities under (a)(2);
- (iii) the need to revise the Program; and
- (iv) the management, coordination, implementation, and activities of the Program.

(C) REPORT.—Not later than 1 year after the date of enactment of the National Earthquake Hazards Reduction Program Reauthorization Act of 2004 and at least once every 2 years thereafter, the Advisory Committee shall report to the Director on its findings of the assessment carried out under subparagraph (B) and its recommendations for ways to improve the Program. In developing recommendations, the Committee shall consider the recommendations of the United States Geological Survey Scientific Earthquake Studies Advisory Committee.

(D) FEDERAL ADVISORY COMMITTEE ACT APPLICATION.—Section 14 of the Federal Advisory Committee Act (5 App. U.S.C. 14) shall not apply to the Advisory Committee.

(b) RESPONSIBILITIES OF PROGRAM AGENCIES.—

(1) LEAD AGENCY.—The National Institute of Standards and Technology shall have the primary responsibility for planning and coordinating the Program. In carrying out this paragraph, the Director of the Institute shall—

- (A) ensure that the Program includes the necessary steps to promote the implementation of earthquake hazard reduction measures by Federal, State, and local govern-

¹The amendments to paragraph (4) would take effect on the first day of the first fiscal year beginning after the date of the enactment of this Act.

ments, national standards and model building code organizations, architects and engineers, and others with a role in planning ~~and constructing~~ *constructing, evaluating, and retrofitting* buildings and ~~lifelines~~ *lifeline infrastructure*;

(B) support the development of performance-based seismic engineering tools, and work with appropriate groups to promote the commercial application of such tools, through earthquake-related building codes, standards, and construction practices;

(C) request the assistance of Federal agencies other than the Program agencies, as necessary to assist in carrying out this Act; and

(D) work with the Federal Emergency Management Agency, the National Science Foundation, and the United States Geological Survey, to develop a comprehensive plan for earthquake engineering research to *provide new and* effectively use existing testing facilities and laboratories (existing at the time of the development of the plan), upgrade facilities and equipment as needed, and integrate new, innovative testing approaches to the research infrastructure in a systematic manner.

[(2) DEPARTMENT OF HOMELAND SECURITY; FEDERAL EMERGENCY MANAGEMENT AGENCY.—

[(A) PROGRAM RESPONSIBILITIES.—The Under Secretary of Homeland Security for Emergency Preparedness and Response (the Director of the Federal Emergency Management Agency)—

[(i) shall work closely with national standards and model building code organizations, in conjunction with the National Institute of Standards and Technology, to promote the implementation of research results;

[(ii) shall promote better building practices within the building design and construction industry including architects, engineers, contractors, builders, and inspectors;

[(iii) shall operate a program of grants and assistance to enable States to develop mitigation, preparedness, and response plans, prepare inventories and conduct seismic safety inspections of critical structures and lifelines, update building and zoning codes and ordinances to enhance seismic safety, increase earthquake awareness and education, and encourage the development of multi-State groups for such purposes;

[(iv) shall support the implementation of a comprehensive earthquake education and public awareness program, including development of materials and their wide dissemination to all appropriate audiences and support public access to locality-specific information that may assist the public in preparing for, mitigating against, responding to and recovering from earthquakes and related disasters;

[(v) shall assist the National Institute of Standards and Technology, other Federal agencies, and private sector groups, in the preparation, maintenance, and wide dissemination of seismic resistant design guid-

ance and related information on building codes, standards, and practices for new and existing buildings, structures, and lifelines, and aid in the development of performance-based design guidelines and methodologies supporting model codes for buildings, structures, and lifelines that are cost effective and affordable;

[(vi) shall develop, coordinate, and execute the National Response Plan when required following an earthquake, and support the development of specific State and local plans for each high risk area to ensure the availability of adequate emergency medical resources, search and rescue personnel and equipment, and emergency broadcast capability;

[(vii) shall develop approaches to combine measures for earthquake hazards reduction with measures for reduction of other natural and technological hazards including performance-based design approaches;

[(viii) shall provide preparedness, response, and mitigation recommendations to communities after an earthquake prediction has been made under paragraph (3)(D); and

[(ix) may enter into cooperative agreements or contracts with States and local jurisdictions and other Federal agencies to establish demonstration projects on earthquake hazard mitigation, to link earthquake research and mitigation efforts with emergency management programs, or to prepare educational materials for national distribution.

[(B) STATE ASSISTANCE PROGRAM CRITERIA.—In order to qualify for assistance under subparagraph (A)(i), a state must—

[(i) demonstrate that the assistance will result in enhanced seismic safety in the State;

[(ii) provide a share of the costs of the activities for which assistance is being given, in accordance with subparagraph (C); and

[(iii) meet such other requirements as the Director of the Agency shall prescribe.

[(C) NON-FEDERAL COST SHARING.—

[(i) In the case of any State which has received, before October 1, 1990, a grant from the Agency for activities under this Act which included a requirement for cost sharing by matching such grant, any grant obtained from the Agency for activities under subparagraph (A)(i) after such date shall not include a requirement for cost sharing in an amount greater than 50 percent of the cost of the project for which the grant is made.

[(ii) In the case of any State which has not received, before October 1, 1990, a grant from the Agency for activities under this Act which included a requirement for cost sharing by matching such grant, any grant obtained from the Agency for activities under subparagraph (A)(i) after such date—

【(I) shall not include a requirement for cost sharing for the first fiscal year of such a grant;

【(II) shall not include a requirement for cost sharing in an amount greater than 25 percent of the cost of the project for which the grant is made for the second fiscal year of such grant, and an cost sharing requirement may be satisfied through in-kind contributions;

【(III) shall not include a requirement for cost sharing in an amount greater than 35 percent of the cost of the project for which the grant is made for the third fiscal year of such grant, and any cost sharing requirement may be satisfied through in-kind contributions; and

【(IV) shall not include a requirement for cost sharing in an amount greater than 50 percent of the cost of the project for which the grant is made for the fourth and subsequent fiscal years of such grant.】

(2) *DEPARTMENT OF HOMELAND SECURITY; FEDERAL EMERGENCY MANAGEMENT AGENCY.—*

(A) *PROGRAM RESPONSIBILITIES.—The Administrator of the Federal Emergency Management Agency—*

(i) *shall operate a program of grants and assistance to enable States to develop mitigation, preparedness, and response plans, purchase necessary instrumentation, prepare inventories and conduct seismic safety inspections of critical structures and lifelines, update building, land use planning, and zoning codes and ordinances to enhance seismic safety, increase earthquake awareness and education, and provide assistance to multi-State groups for such purposes;*

(ii) *shall support the implementation of a comprehensive earthquake education, outreach, and public awareness program, including development of materials and their wide dissemination to all appropriate audiences and support public access to locality-specific information that may assist the public in preparing for, mitigating against, responding to and recovering from earthquakes and related disasters;*

(iii) *shall, in conjunction with the Director of the National Institute of Standards and Technology, other Federal agencies, and private sector groups, use research results to support the preparation, maintenance, and wide dissemination of seismic resistant design guidance and related information on building codes, standards, and practices for new and existing buildings, structures, and lifelines, aid in the development of performance-based design guidelines and methodologies, and support model codes that are cost effective and affordable in order to promote better practices within the design and construction industry and reduce losses from earthquakes;*

(iv) *shall enter into cooperative agreements or contracts with States and local jurisdictions and other*

Federal agencies to establish demonstration projects on earthquake hazard mitigation, to link earthquake research and mitigation efforts with emergency management programs, or to prepare educational materials for national distribution; and

(v) shall support the Director of the National Institute of Standards and Technology in the completion of programmatic goals.

(B) STATE ASSISTANCE PROGRAM CRITERIA.—*In order to qualify for assistance under subparagraph (A)(i), a State must—*

(i) demonstrate that the assistance will result in enhanced seismic safety in the State;

(ii) provide 25 percent of the costs of the activities for which assistance is being given, except that the Administrator may lower or waive the cost-share requirement for these activities for a small impoverished community, as defined in section 203 of the Disaster Relief Act of 1974 (42 U.S.C. 5133(a)); and

(iii) meet such other requirements as the Administrator shall prescribe.

(3) UNITED STATES GEOLOGICAL SURVEY.—*The United States Geological Survey shall conduct research and other activities necessary to characterize and identify earthquake hazards, assess earthquake risks, monitor seismic activity, and improve earthquake [predictions.] forecasts. In carrying out this paragraph, the Director of the United States Geological Survey shall report on significant domestic and international earthquakes and—*

(A) *conduct a systematic assessment of the seismic risks in each region of the Nation prone to earthquakes, including, where appropriate, the establishment and operation of intensive monitoring projects on hazardous faults, seismic microzonation studies in urban and other developed areas where earthquake risk is determined to be significant, and engineering seismology studies;*

(B) *work with officials of State and local governments to ensure that they are knowledgeable about the specific seismic risks in their areas;*

(C) *develop standard procedures, in consultation with the Director of the Federal Emergency Management Agency and the Director of the National Institute of Standards and Technology, for issuing earthquake [predictions, including aftershock advisories] alerts and early warnings;*

[(D)] *issue when necessary, and notify the [Director of the Federal] Administrator of the Federal Emergency Management Agency and the Director of the National Institute of Standards and Technology of, an earthquake prediction or other earthquake advisory, which may be evaluated by the National Earthquake Prediction Evaluation Council, which shall be exempt from the requirements of section 10(a)(2) of the Federal Advisory Committee Act when meeting for such purposes;]*

(D) *issue when necessary and feasible, and notify the Administrator of the Federal Emergency Management Agency,*

the Director of the National Institute of Standards and Technology, and State and local officials, an alert and an earthquake warning;

(E) operate, **[using]** *including* the National Earthquake Information Center, a forum for the international exchange of earthquake information which shall—

(i) promote the exchange of information on earthquake research and earthquake preparedness between the United States and other nations;

(ii) maintain a library containing selected reports, research papers, and data produced through the Program;

(iii) answer requests from other nations for information on United States earthquake research and earthquake preparedness programs; and

(iv) direct foreign requests to the agency involved in the Program which is best able to respond to the request;

(F) operate a National Seismic System;

(G) support regional seismic networks, which shall complement the National Seismic Network;

(H) work with the National Science Foundation, the Federal Emergency Management Agency, and the National Institute of Standards and Technology to develop a comprehensive plan for earthquake engineering research to effectively use existing testing facilities and laboratories (in existence at the time of the development of the plan), upgrade facilities and equipment as needed, and integrate new, innovative testing approaches to the research infrastructure in a systematic manner.

(I) work with other Program agencies to coordinate Program activities with similar earthquake hazards reduction efforts in other countries, to ensure that the Program benefits from relevant information and advances in those countries**;** and**;**

(J) maintain suitable seismic hazard maps *and data* in support of building codes for structures and **[lifelines]** *life-line infrastructure*, including additional maps needed for performance-based design approaches**;** and

(K) *support the Director of the National Institute of Standards and Technology in the completion of programmatic goals.*

(4) NATIONAL SCIENCE FOUNDATION.—[The National Science Foundation]

(A) *IN GENERAL.—The National Science Foundation shall be responsible for funding research on earth sciences to improve the understanding of the causes and behavior of earthquakes, on earthquake engineering, and on human response to earthquakes. In carrying out this paragraph, the Director of the National Science Foundation shall—*

[(A)](i) encourage prompt dissemination of significant findings, sharing of data, samples, physical collections, and other supporting materials, and development of intellectual property so research results can be used by appropriate organizations to mitigate earthquake damage;

[(B)](i) in addition to supporting individual investigators, support university research consortia, *State agencies, State geological surveys*, and centers for research in geosciences and in earthquake engineering;

[(C)](iii) work closely with the United States Geological Survey to support applied science in the production of a systematic series of earthquake-related geologic hazard maps, and to identify geographic regions of national concern that should be the focus of targeted solicitations for earthquake-related research proposals;

[(D)](iv) support research that improves the safety and performance of buildings, structures, and lifeline systems using [large-scale experimental and computational facilities of the George E. Brown Jr. Network for Earthquake Engineering Simulation and other institutions engaged in research and the implementation of the National Earthquake Hazards Reduction Program] *experimental and computational facilities*;

[(E)](v) emphasize, in earthquake engineering research, development of economically feasible methods to retrofit existing buildings and to protect [lifelines] *lifeline infrastructure* to mitigate earthquake damage;

[(F)](vi) support research that studies the political, economic, and social factors that influence the implementation of hazard reduction measures;

[(G)](vii) include to the maximum extent practicable diverse institutions, including Historically Black Colleges and Universities and those serving large proportions of Hispanics, Native Americans, Asian-Pacific Americans, and other underrepresented populations[; and];

[(H)](viii) develop, in conjunction with the Federal Emergency Management Agency, the National Institute of Standards and Technology, and the United States Geological Survey, a comprehensive plan for earthquake engineering research to effectively use existing testing facilities and laboratories (in existence at the time of the development of the plan), upgrade facilities and equipment as needed, and integrate new, innovative testing approaches to the research infrastructure in a systematic manner[.]; and

[(I)](ix) support the Director of the National Institute of Standards and Technology in the completion of programmatic goals.

(B) IDENTIFICATION OF FUNDING.—*The National Science Foundation shall—*

(i) to the extent practicable, note in any notice of Program funding or other funding possibilities under the Program that the funds are part of the Program;

(ii) to the extent practicable, track the awarding of Federal funds through the Program; and

(iii) not less frequently than once every 2 years, submit to the director of the Program a report specifying the amount of Federal funds awarded to conduct research that enhances the understanding of earthquake science.

(5) NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY.—In addition to the lead agency responsibilities described under paragraph (1), the National Institute of Standards and Technology shall be responsible for carrying out research and development to improve *community resilience through building codes and standards and practices for structures and [lifelines] lifeline infrastructure*. In carrying out this paragraph, the Director of the National Institute of Standards and Technology shall—

(A) work closely with national standards and model building code organizations, in conjunction with the Agency, to promote the implementation of research results;

(B) promote better building practices among architects and engineers;

(C) work closely with national standards organizations to develop seismic safety standards and practices for new and existing [lifelines] *lifeline infrastructure*;

(D) support the development and commercial application of cost effective and affordable performance-based seismic engineering by providing technical support for seismic engineering practices and related building code, standards, and practices development; and

(E) work with the National Science Foundation, the Federal Emergency Management Agency, and the United States Geological Survey to develop a comprehensive plan for earthquake engineering research to effectively use existing testing facilities and laboratories (in existence at the time of the development of the plan), upgrade facilities and equipment as needed, and integrate new, innovative testing approaches to the research infrastructure in a systematic manner.

(c) BUDGET COORDINATION.—

(1) GUIDANCE.—The Interagency Coordinating Committee shall each year provide guidance to the other Program agencies concerning the preparation of requests for appropriations for activities related to the Program, and shall prepare, in conjunction with the other Program agencies, an annual Program budget to be submitted to the Office of Management and Budget.

(2) REPORTS.—Each Program agency shall include with its annual request for appropriations submitted to the Office of Management and Budget a report that—

(A) identifies each element of the proposed Program activities of the agency;

(B) specifies how each of these activities contributes to the Program; and

(C) states the portion of its request for appropriations allocated to each element of the Program.

[SEC. 8. SEISMIC STANDARDS.

[42 U.S.C. 7705b]

[(a) BUILDINGS.—

[(1) ADOPTION OF STANDARDS.—The President shall adopt, not later than December 1, 1994, standards for assessing and enhancing the seismic safety of existing buildings constructed for or leased by the Federal Government which were designed

and constructed without adequate seismic design and construction standards. Such standards shall be developed by the Interagency Committee on Seismic Safety in Construction, whose chairman is the Director of the National Institute of Standards and Technology or his designee, and which shall work in consultation with appropriate private sector organizations.

[(2) REPORT TO CONGRESS.—The President shall report to the Congress, not later than December 1, 1994, on how the standards adopted under paragraph (1) could be applied with respect to buildings—

[(A) for which Federal financial assistance has been obtained through grants, loans, financing guarantees, or loan or mortgage insurance programs; or

[(B) the structural safety of which is regulated by a Federal agency.

[(3) REGULATIONS.—The President shall ensure the issuance, before February 1, 1993, by all Federal agencies of final regulations required by section 4(b) of Executive Order numbered 12699, issued January 5, 1990.

[(b) LIFELINES.—The Director of the Agency, in consultation with the Director of the National Institute of Standards and Technology, shall submit to the Congress, not later than June 30, 1992, a plan, including precise timetables and budget estimates, for developing and adopting, in consultation with appropriate private sector organizations, design and construction standards for lifelines. The plan shall include recommendations of ways Federal regulatory authority could be used to expedite the implementation of such standards.]

SEC. 8. SEISMIC STANDARDS.

(a) *ASSESSMENT AND RECOMMENDATIONS.*—*Not later than December 1, 2019, the Director of the National Institute of Standards and Technology and the Administrator of the Federal Emergency Management Agency shall jointly convene a committee of experts from Federal agencies, nongovernmental organizations, private sector entities, disaster management professional associations, engineering professional associations, and professional construction and homebuilding industry associations, to assess and recommend options for improving the built environment and critical infrastructure to reflect performance goals stated in terms of post-earthquake reoccupancy and functional recovery time.*

(b) *REPORT TO CONGRESS.*—*Not later than June 30, 2020, the committee convened under paragraph (1) shall submit to the Committee on Commerce, Science, and Transportation, the Committee on Energy and Natural Resources, and the Committee on Homeland Security and Governmental Affairs of the Senate and the Committee on Science, Space, and Technology, the Committee on Natural Resources, and the Committee on Homeland Security of the House of Representatives a report on recommended options for improving the built environment and critical infrastructure to reflect performance goals stated in terms of post-earthquake reoccupancy and functional recovery time.*

SEC. 9. ACCEPTANCE OF GIFTS.

[42 U.S.C. 7705c]

(a) **AUTHORITY.**—In furtherance of the purposes of this Act, the Director of the Agency may accept and use bequests, gifts, or donations of services, money, or property, notwithstanding section 3679 of the Revised Statutes (31 U.S.C. 1342).

(b) **CRITERIA.**—The [Director of the Agency] *Administrator of the Federal Emergency Management Agency* shall establish by regulation criteria for determining whether to accept bequests, gifts, or donations of services, money, or property. Such criteria shall take into consideration whether the acceptance of the bequest, gift, or donation would reflect unfavorably on the Director's ability to carry out his responsibilities in a fair and objective manner, or would compromise the integrity of, or the appearance of the integrity of, the Program or any official involved in administering the Program.

SEC. 10. POST-EARTHQUAKE INVESTIGATIONS PROGRAM.

[42 U.S.C. 7705e]

There is established within the United States Geological Survey a post-earthquake investigations program, the purpose of which is to investigate major earthquakes, so as to learn lessons which can be applied to reduce the loss of lives and property in future earthquakes. The United States Geological Survey, in consultation with each Program agency, shall organize investigations to study the implications of the earthquake in the areas of responsibility of each Program agency. The investigations shall begin as rapidly as possible and may be conducted by grantees and contractors. The Program agencies shall ensure that the results of investigations are disseminated widely. The Director of the Survey is authorized to utilize earthquake expertise from the Agency, the National Science Foundation, the National Institute of Standards and Technology, other Federal agencies, and private contractors, on a reimbursable basis, in the conduct of such earthquake investigations. At a minimum, investigations under this section shall include—

(1) analysis by the National Science Foundation and the United States Geological Survey of the causes of the earthquake and the nature of the resulting ground motion;

(2) analysis by the National Science Foundation and the National Institute of Standards and Technology of the behavior of structures and [lifelines] *lifeline infrastructure*, both those that were damaged and those that were undamaged; and

(3) analysis by each of the Program agencies of the effectiveness of the earthquake hazards mitigation programs and actions relating to its area of responsibility under the Program, and how those programs and actions could be strengthened.

SEC. 12. AUTHORIZATION OF APPROPRIATIONS.

[42 U.S.C. 7706]

(a) **GENERAL AUTHORIZATION FOR THE PROGRAM.**—

(1) There are authorized to be appropriated to the President to carry out the provisions of sections 5 and 6 of this Act (in addition to any authorizations for similar purposes included in other Acts and the authorizations set forth in subsections (b) and (c) of this section), not to exceed \$1,000,000 for the fiscal year ending September 30, 1978, not to exceed \$2,000,000 for

the fiscal year ending September 30, 1979, and not to exceed \$2,000,000 for the fiscal year ending September 30, 1980.

(2) There are authorized to be appropriated to the Director to carry out the provisions of sections 5 and 6 of this Act for the fiscal year ending September 30, 1981—

(A) \$1,000,000 for continuation of the Interagency Committee on Seismic Safety in Construction and the Building Seismic Safety Council programs,

(B) \$1,500,000 for plans and preparedness for earthquake disasters,

(C) \$500,000 for prediction response planning,

(D) \$600,000 for architectural and engineering planning and practice programs,

(E) \$1,000,000 for development and application of a public education program,

(F) \$3,000,000 for use by the National Science Foundation in addition to the amount authorized to be appropriated under subsection (c), which amount includes \$2,400,000 for earthquake policy research and \$600,000 for the strong ground motion element of the siting program, and

(G) \$1,000,000 for use by the Center for Building Technology, National Bureau of Standards in addition to the amount authorized to be appropriated under subsection (d) for earthquake activities in the Center.

(3) There are authorized to be appropriated to the Director for the fiscal year ending September 30, 1982, \$2,000,000 to carry out the provisions of sections 5 and 6 of this Act.

(4) There are authorized to be appropriated to the Director, to carry out the provisions of sections 5 and 6 of this Act \$1,281,000 for the fiscal year ending September 30, 1983.

(5) There are authorized to be appropriated to the Director, to carry out the provisions of sections 5 and 6 of this Act, for the fiscal year ending September 30, 1984, \$3,705,000, and for the fiscal year ending September 30, 1985, \$6,096,000.

(6) There are authorized to be appropriated to the Director, to carry out the provisions of sections 5 and 6 of this Act, for the fiscal year ending September 30, 1986, \$5,596,000, and for the fiscal year ending September 30, 1987, \$5,848,000.

(7) There are authorized to be appropriated to the Director of the Agency, to carry out this Act \$5,778,000 for the fiscal year ending September 30, 1988, \$5,788,000 for the fiscal year ending September 30, 1989, \$8,798,000 for the fiscal year ending September 30, 1990, \$14,750,000 for the fiscal year ending September 30, 1991, \$19,000,000 for the fiscal year ending September 30, 1992, \$22,000,000 for the fiscal year ending September 30, 1993, \$25,000,000 for the fiscal year ending September 30, 1995, \$25,750,000 for the fiscal year ending September 30, 1996, \$20,900,000 for the fiscal year ending September 30, 1998, \$21,500,000 for the fiscal year ending September 30, 1999; \$19,861,000 for the fiscal year ending September 30, 2001, of which \$450,000 is for National Earthquake Hazard Reduction Program-eligible efforts of an established multi-state consortium to reduce the unacceptable threat of earthquake damages in the New Madrid seismic re-

gion through efforts to enhance preparedness, response, recovery, and mitigation; \$20,705,000 for the fiscal year ending September 30, 2002; and \$21,585,000 for the fiscal year ending September 30, 2003.

(8) There are authorized to be appropriated to the Federal Emergency Management Agency for carrying out this title—

- (A) \$21,000,000 for fiscal year 2005,
- (B) \$21,630,000 for fiscal year 2006,
- (C) \$22,280,000 for fiscal year 2007,
- (D) \$22,950,000 for fiscal year 2008, [and]
- (E) \$23,640,000 for fiscal year 2009,
- (F) \$8,670,000 for fiscal year 2018,
- (G) \$8,843,000 for fiscal year 2019,
- (H) \$9,020,000 for fiscal year 2020,
- (I) \$9,200,000 for fiscal year 2021, and
- (J) \$9,385,000 for fiscal year 2022,

of which not less than 10 percent of available program funds actually appropriated shall be made available each such fiscal year for supporting the development of performance-based, cost-effective, and affordable design guidelines and methodologies in codes for buildings, structures, and [lifelines] *lifeline infrastructure*.

(b) UNITED STATES GEOLOGICAL SURVEY.—

(1) There are authorized to be appropriated to the Secretary of the Interior for purposes of carrying out, through the Director of the United States Geological Survey, the responsibilities that may be assigned to the Director under this Act not to exceed \$27,500,000 for the fiscal year ending September 30, 1978; not to exceed \$35,000,000 for the fiscal year ending September 30, 1979; not to exceed \$40,000,000 for the fiscal year ending September 30, 1980; \$32,484,000 for the fiscal year ending September 30, 1981; \$34,425,000 for the fiscal year ending September 30, 1982; \$31,843,000 for the fiscal year ending September 30, 1983; \$35,524,000 for the fiscal year ending September 30, 1984; \$37,300,200 for the fiscal year ending September 30, 1985; \$35,578,000 for the fiscal year ending September 30, 1986; \$37,179,000 for the fiscal year ending September 30, 1987; \$38,540,000 for the fiscal year ending September 30, 1988; \$41,819,000 for the fiscal year ending September 30, 1989; \$55,283,000 for the fiscal year ending September 30, 1990, of which \$8,000,000 shall be for earthquake investigations under section 11; \$50,000,000 for the fiscal year ending September 30, 1991; \$54,500,000 for the fiscal year ending September 30, 1992; \$62,500,000 for the fiscal year ending September 30, 1993; \$49,200,000 for the fiscal year ending September 30, 1995; \$50,676,000 for the fiscal year ending September 30, 1996; \$52,565,000 for the fiscal year ending September 30, 1998, of which \$3,800,000 shall be used for the Global Seismic Network operated by the Agency; and \$54,052,000 for the fiscal year ending September 30, 1999, of which \$3,800,000 shall be used for the Global Seismic Network operated by the Agency. There are authorized to be appropriated to the Secretary of the Interior for purposes of carrying out, through the Director of the United States Geological Survey, the responsibilities that may be assigned to the Direc-

tor under this Act \$48,360,000 for fiscal year 2001, of which \$3,500,000 is for the Global Seismic Network and \$100,000 is for the Scientific Earthquake Studies Advisory Committee established under section 210 of the Earthquake Hazards Reduction Authorization Act of 2000; \$50,415,000 for fiscal year 2002, of which \$3,600,000 is for the Global Seismic Network and \$100,000 is for the Scientific Earthquake Studies Advisory Committee; and \$52,558,000 for fiscal year 2003, of which \$3,700,000 is for the Global Seismic Network and \$100,000 is for the Scientific Earthquake Studies Advisory Committee. Of the amounts authorized to be appropriated under this paragraph, at least—

(A) \$8,000,000 of the amount authorized to be appropriated for the fiscal year ending September 30, 1998;

(B) \$8,250,000 of the amount authorized for the fiscal year ending September 30, 1999;

(C) \$9,000,000 of the amount authorized to be appropriated for fiscal year 2001;

(D) \$9,250,000 of the amount authorized to be appropriated for fiscal year 2002; and

(E) \$9,500,000 of the amount authorized to be appropriated for fiscal year 2003,

shall be used for carrying out a competitive, peer-reviewed program under which the Director, in close coordination with and as a complement to related activities of the United States Geological Survey, awards grants to, or enters into cooperative agreements with, State and local governments and persons or entities from the academic community and the private sector.

(2) There are authorized to be appropriated to the United States Geological Survey for carrying out this title—

(A) \$77,000,000 for fiscal year 2005, of which not less than \$30,000,000 shall be made available for completion of the [Advanced National Seismic Research and Monitoring System] *Advanced National Seismic System* established under section 13;

(B) \$84,410,000 for fiscal year 2006, of which not less than \$36,000,000 shall be made available for completion of the [Advanced National Seismic Research and Monitoring System] *Advanced National Seismic System* established under section 13;

(C) \$85,860,000 for fiscal year 2007, of which not less than \$36,000,000 shall be made available for completion of the [Advanced National Seismic Research and Monitoring System] *Advanced National Seismic System* established under section 13;

(D) \$87,360,000 for fiscal year 2008, of which not less than \$36,000,000 shall be made available for completion of the [Advanced National Seismic Research and Monitoring System] *Advanced National Seismic System* established under section 13[; and];

(E) \$88,900,000 for fiscal year 2009, of which not less than \$36,000,000 shall be made available for completion of the [Advanced National Seismic Research and Monitoring System] *Advanced National Seismic System* established under section 13[.];

(F) \$72,420,000 for fiscal year 2018, of which not less than \$30,000,000 shall be made available for completion of the Advanced National Seismic System established under section 7707 of this title;

(G) \$73,868,000 for fiscal year 2019, of which not less than \$30,000,000 shall be made available for completion of the Advanced National Seismic System established under section 7707 of this title;

(H) \$75,345,000 for fiscal year 2020, of which not less than \$30,000,000 shall be made available for completion of the Advanced National Seismic System established under section 7707 of this title;

(I) \$75,853,000 for fiscal year 2021, of which not less than \$30,000,000 shall be made available for completion of the Advanced National Seismic System established under section 7707 of this title; and

(J) \$78,390,000 for fiscal year 2022, of which not less than \$30,000,000 shall be made available for completion of the Advanced National Seismic System established under section 7707 of this title.

(c) NATIONAL SCIENCE FOUNDATION.—

(1) To enable the Foundation to carry out responsibilities that may be assigned to it under this Act, there are authorized to be appropriated to the Foundation not to exceed \$27,500,000 for the fiscal year ending September 30, 1978; not to exceed \$35,000,000 for the fiscal year ending September 30, 1979; not to exceed \$40,000,000 for the fiscal year ending September 30, 1980; \$26,600,000 for the fiscal year ending September 30, 1981; \$27,150,000 for the fiscal year ending September 30, 1982; \$25,000,000 for the fiscal year ending September 30, 1983; \$25,800,000 for the fiscal year ending September 30, 1984; \$28,665,000 for the fiscal year ending September 30, 1985; \$27,760,000 for the fiscal year ending September 30, 1986; \$29,009,000 for the fiscal year ending September 30, 1987; \$28,235,000 for the fiscal year ending September 30, 1988; \$31,634,000 for the fiscal year ending September 30, 1989; \$38,454,000 for the fiscal year ending September 30, 1990. Of the amounts authorized for Engineering under section 101(d)(1)(B) of the National Science Foundation Authorization Act of 1988, \$24,000,000 is authorized for carrying out this Act for the fiscal year ending September 30, 1991, and of the amounts authorized for Geosciences under section 101(d)(1)(D) of the National Science Foundation Authorization Act of 1988, \$13,000,000 is authorized for carrying out this Act for the fiscal year ending September 30, 1991. Of the amounts authorized for Research and Related Activities under section 101(e)(1) of the National Science Foundation Authorization Act of 1988, \$29,000,000 is authorized for engineering research under this Act, and \$14,750,000 is authorized for geosciences research under this Act, for the fiscal year ending September 30, 1992. Of the amounts authorized for Research and Related Activities under section 101(f)(1) of the National Science Foundation Authorization Act of 1988, \$34,500,000 is authorized for engineering research under this Act, and \$17,500,000 is authorized for geosciences research under this Act, for the fiscal year ending

September 30, 1993. There are authorized to be appropriated, out of funds otherwise authorized to be appropriated to the National Science Foundation: (1) \$16,200,000 for engineering research and \$10,900,000 for geosciences research for the fiscal year ending September 30, 1995, (2) \$16,686,000 for engineering research and \$11,227,000 for geosciences research for the fiscal year ending September 30, 1996, (3) \$18,450,000 for engineering research and \$11,920,000 for geosciences research for the fiscal year ending September 30, 1998, (4) \$19,000,000 for engineering research and \$12,280,000 for geosciences research for the fiscal year ending September 30, 1999. There are authorized to be appropriated to the National Science Foundation \$19,000,000 for engineering research and \$11,900,000 for geosciences research for fiscal year 2001; \$19,808,000 for engineering research and \$12,406,000 for geosciences research for fiscal year 2002; and \$20,650,000 for engineering research and \$12,933,000 for geosciences research for fiscal year 2003.

(2) There are authorized to be appropriated to the National Science Foundation for carrying out this title—

- (A) \$38,000,000 for fiscal year 2005;
- (B) \$39,140,000 for fiscal year 2006;
- (C) \$40,310,000 for fiscal year 2007;
- (D) \$41,520,000 for fiscal year 2008; **[and]**
- (E) \$42,770,000 for fiscal year 2009~~].~~;
- (F) \$55,080,000 for fiscal year 2018,
- (G) \$56,181,000 for fiscal year 2019,
- (H) \$57,305,000 for fiscal year 2020,
- (I) \$58,451,000 for fiscal year 2021, and
- (J) \$59,620,000 for fiscal year 2022.

(d) NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY.—

(1) To enable the National Institute of Standards and Technology to carry out responsibilities that may be assigned to it under this Act, there are authorized to be appropriated \$425,000 for the fiscal year ending September 30, 1981; \$425,000 for the fiscal year ending September 30, 1982; \$475,000 for the fiscal year ending September 30, 1983; \$475,000 for the fiscal year ending September 30, 1984; \$498,750 for the fiscal year ending September 30, 1985; \$499,000 for the fiscal year ending September 30, 1986; \$521,000 for the fiscal year ending September 30, 1987; \$525,000 for the fiscal year ending September 30, 1988; \$525,000 for the fiscal year ending September 30, 1989; \$2,525,000 for the fiscal year ending September 30, 1990; \$1,000,000 for the fiscal year ending September 30, 1991; \$3,000,000 for the fiscal year ending September 30, 1992; and \$4,750,000 for the fiscal year ending September 30, 1993. There are authorized to be appropriated, out of funds otherwise authorized to be appropriated to the National Institute of Standards and Technology, \$1,900,000 for the fiscal year ending September 30, 1995, \$1,957,000 for the fiscal year ending September 30, 1996, \$2,000,000 for the fiscal year ending September 30, 1998, \$2,060,000 for the fiscal year ending September 30, 1999, \$2,332,000 for fiscal year 2001, \$2,431,000 for fiscal year 2002, and \$2,534,300 for fiscal year 2003.

(2) There are authorized to be appropriated to the National Institute of Standards and Technology for carrying out this title—

- (A) \$10,000,000 for fiscal year 2005,
- (B) \$11,000,000 for fiscal year 2006,
- (C) \$12,100,000 for fiscal year 2007,
- (D) \$13,310,000 for fiscal year 2008, [and]
- (E) \$14,640,000 for fiscal year 2009,
- (F) \$5,304,000 for fiscal year 2018,
- (G) \$5,410,000 for fiscal year 2019,
- (H) \$5,518,000 for fiscal year 2020,
- (I) \$5,628,000 for fiscal year 2021, and
- (J) \$5,741,000 for fiscal year 2022,

of which \$2,000,000 shall be made available each such fiscal year for supporting the development of performance-based, cost-effective, and affordable codes for buildings, structures, and [lifelines] *lifeline infrastructure*.

SEC. 13. [ADVANCED NATIONAL SEISMIC RESEARCH AND MONITORING SYSTEM] *ADVANCED NATIONAL SEISMIC SYSTEM*.

[42 U.S.C. 7707]

(a) **ESTABLISHMENT.**—The Director of the United States Geological Survey shall establish and operate an [Advanced National Seismic Research and Monitoring System] *Advanced National Seismic System*. The purpose of such system shall be to organize, modernize, standardize, and stabilize the national, regional, and urban seismic monitoring systems in the United States, including sensors, recorders, and data analysis centers, into a coordinated system that will measure and record the full range of frequencies and amplitudes exhibited by seismic waves, in order to enhance earthquake research and warning capabilities.

(b) **MANAGEMENT PLAN.**—Not later than 90 days after the date of the enactment of the Earthquake Hazards Reduction Authorization Act of 2000, the Director of the United States Geological Survey shall transmit to the Congress a 5-year management plan for establishing and operating the [Advanced National Seismic Research and Monitoring System] *Advanced National Seismic System*. The plan shall include annual cost estimates for both modernization and operation, milestones, standards, and performance goals, as well as plans for securing the participation of all existing networks in the [Advanced National Seismic Research and Monitoring System] *Advanced National Seismic System* and for establishing new, or enhancing existing, partnerships to leverage resources.