

Calendar No. 75

109TH CONGRESS
1ST SESSION

S. 50

[Report No. 109–59]

To authorize and strengthen the National Oceanic and Atmospheric Administration's tsunami detection, forecast, warning, and mitigation program, and for other purposes.

IN THE SENATE OF THE UNITED STATES

JANUARY 24, 2005

Mr. INOUE (for himself, Mr. STEVENS, Ms. CANTWELL, Mr. BURNS, Mr. LAUTENBERG, Ms. SNOWE, Mr. AKAKA, Ms. MURKOWSKI, Mrs. CLINTON, Mr. SMITH, Mrs. MURRAY, Mr. LIEBERMAN, Ms. LANDRIEU, Mr. NELSON of Florida, Mr. KERRY, Mr. CHAMBLISS, Mr. WYDEN, Mr. DAYTON, Mrs. BOXER, Mrs. FEINSTEIN, Ms. MIKULSKI, Mr. SARBANES, Mr. CORZINE, Mr. LOTT, Mr. GREGG, and Mr. NELSON of Nebraska) introduced the following bill; which was read twice and referred to the Committee on Commerce, Science, and Transportation

APRIL 19, 2005

Reported by Mr. STEVENS, with an amendment

[Strike all after the enacting clause and insert the part printed in italic]

A BILL

To authorize and strengthen the National Oceanic and Atmospheric Administration's tsunami detection, forecast, warning, and mitigation program, 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 “Tsunami Preparedness
5 Act”.

6 **SEC. 2. FINDINGS AND PURPOSES.**

7 (a) FINDINGS.—The Congress finds the following:

8 (1) Tsunami are a series of large waves of long
9 wavelength created by the displacement of water by
10 violent undersea disturbances such as earthquakes,
11 volcanic eruptions, landslides, explosions, and the
12 impact of cosmic bodies.

13 (2) Tsunami have caused, and can cause in the
14 future, enormous loss of human life, injury, destruc-
15 tion of property, and economic and social disruption
16 in coastal and island communities.

17 (3) While 85 percent of tsunami occur in the
18 Pacific Ocean, and coastal and island communities
19 in this region are the most vulnerable to the destruc-
20 tive results, tsunami can occur at any point in any
21 ocean or related body of water where there are
22 earthquakes, volcanoes, or any other activity that
23 displaces a large volume of water.

24 (4) A number of States and territories are sub-
25 ject to the threat of tsunamis, including Alaska,

1 California, Hawaii, Oregon, Washington, American
2 Samoa, the Commonwealth of the Northern Mariana
3 Islands, Guam, Puerto Rico, and the U.S. Virgin Is-
4 lands.

5 (5) The National Oceanic and Atmospheric Ad-
6 ministration is responsible for maintaining a tsu-
7 nami detection and warning system for the Nation,
8 issuing warnings to United States communities at
9 risk from tsunami, and preparing those communities
10 to respond appropriately, through—

11 (A) the Pacific Tsunami Warning Center
12 in Ewa Beach, Hawaii, which serves as a warn-
13 ing center for Hawaii, all other United States
14 assets in the Pacific, and Puerto Rico;

15 (B) the Alaska/West Coast Tsunami Warn-
16 ing Center in Palmer, Alaska, which is respon-
17 sible for issuing warnings for Alaska, British
18 Columbia, California, Oregon, and Washington;

19 (C) the Federal-State national tsunami
20 hazard mitigation program;

21 (D) a tsunami research and assessment
22 program, including programs conducted by the
23 Pacific Marine Environmental Laboratory;

1 ~~(E)~~ the TsunamiReady Program, which
2 educates and prepares communities for survival
3 before and during a tsunami; and

4 ~~(F)~~ other related programs.

5 (6) The National Oceanic and Atmospheric Ad-
6 ministration also represents the United States as a
7 member of the International Coordination Group for
8 the Tsunami Warning System in the Pacific, admin-
9 istered by the Intergovernmental Oceanographic
10 Commission of UNESCO, for which the Pacific Tsu-
11 nami Warning Center acts as the operational center
12 and shares seismic and water level information with
13 26 member states, and maintains UNESCO's Inter-
14 national Tsunami Information Center, in Honolulu,
15 Hawaii, which provides technical and educational as-
16 sistance to member states.

17 (7) The Tsunami Warning Centers receive seis-
18 mographic information from the Global Seismic Net-
19 work, an international system of earthquake moni-
20 toring stations, from the United States Geological
21 Survey National Earthquake Information Center,
22 and from cooperative regional seismic networks, and
23 use these data to issue tsunami warnings and inte-
24 grate the information with data from their own tidal
25 and deep ocean monitoring stations, to cancel or

1 verify the existence of a damaging tsunami. Warn-
2 ings are disseminated by the National Oceanic and
3 Atmospheric Administration to State emergency op-
4 eration centers.

5 (8) Current gaps in the International Tsunami
6 Warning System, such as the lack of regional warn-
7 ing systems in the Indian Ocean, the southwest Pa-
8 cific Ocean, Central and South America, the Medi-
9 terranean Sea, and Caribbean, pose risks for coastal
10 and island communities.

11 (9) The tragic and extreme loss of life experi-
12 enced by countries in the Indian Ocean following the
13 magnitude 9.0 earthquake and resulting tsunami in
14 that region on December 26, 2004, illustrates the
15 destructive consequences which can occur in the ab-
16 sence of an effective tsunami warning and notifica-
17 tion system.

18 (10) An effective tsunami warning and notifica-
19 tion system is part of a multi-hazard disaster warn-
20 ing and preparedness program and requires near
21 real-time seismic, sea level, and oceanographic data,
22 high-speed data analysis capabilities, a high-speed
23 tsunami warning communication system, a sustained
24 program of education and risk assessment, and an
25 established local communications infrastructure for

1 timely and effective dissemination of warnings to ac-
2 tivate evacuation of tsunami hazard zones.

3 (11) The Tsunami Warning System for the Pa-
4 cific is a model for other regions of the world to
5 adopt, and can be expanded and modernized to in-
6 crease detection, forecast, and warning capabilities
7 for vulnerable states and territories; reduce the inci-
8 dence of costly false alarms; improve reliability of
9 measurement and assessment technology; and in-
10 crease community preparedness.

11 (12) Tsunami warning and preparedness capa-
12 bility can be developed in other vulnerable areas of
13 the world, such as the Indian Ocean, by identifying
14 tsunami hazard zones; educating populations; devel-
15 oping alert and notification communications infra-
16 structure; and by deploying near real-time tsunami
17 detection sensors and gauges; establishing hazard
18 communication and warning networks; expanding
19 global monitoring of seismic activity; encouraging
20 the increased exchange of seismic and tidal data be-
21 tween nations; and improving international coordina-
22 tion when a tsunami is detected.

23 (13) UNESCO has recognized the need to es-
24 tablish tsunami warning systems for regions beyond
25 the Pacific Basin that are vulnerable to tsunams; in-

1 eluding the Indian Ocean, and has convened a work-
2 ing group to lead an effort to expand the Inter-
3 national Tsunami Warning System in the Pacific to
4 such vulnerable regions.

5 (14) The international community and all vul-
6 nerable nations should take coordinated efforts to
7 establish and participate in regional tsunami warn-
8 ing systems and other hazard warnings systems de-
9 veloped to meet the goals of the United Nations
10 International Strategy for Disaster Reduction.

11 (b) PURPOSES.—The purposes of this Act are—

12 (1) to improve tsunami detection, forecast,
13 warnings, notification, preparedness, and mitigation
14 in order to protect life and property both in the
15 United States and elsewhere in the world;

16 (2) to improve and modernize the existing Pa-
17 cific Tsunami Warning System to increase coverage,
18 reduce false alarms and increase accuracy of fore-
19 casts and warnings, and expand detection and warn-
20 ing systems to include other vulnerable States and
21 United States territories, including the Caribbean/
22 Atlantic/Gulf region;

23 (3) to increase and accelerate mapping, mod-
24 eling, research, assessment, education, and outreach
25 efforts in order to improve forecasting, prepared-

1 ness, mitigation, response, and recovery of tsunami
2 and related coastal hazards;

3 (4) to provide technical and other assistance to
4 speed international efforts to establish regional tsu-
5 nami warning systems in vulnerable areas worldwide,
6 including the Indian Ocean; and

7 (5) to improve Federal, State, and international
8 coordination for tsunami and other coastal hazard
9 warnings and preparedness.

10 **SEC. 3. TSUNAMI DETECTION AND WARNING SYSTEM.**

11 (a) **IN GENERAL.**—The Administrator of the Na-
12 tional Oceanic and Atmospheric Administration shall oper-
13 ate regional tsunami detection and warning systems for
14 the Pacific Ocean region and for the Atlantic Ocean, Car-
15 ibbean, and Gulf of Mexico region that will provide max-
16 imum detection capability for United States coastal tsu-
17 nami.

18 (b) **SYSTEM REQUIREMENTS.**—

19 (1) **PACIFIC SYSTEM.**—The Pacific tsunami
20 warning system shall cover the entire Pacific Ocean
21 area, including the Western Pacific, the Central Pa-
22 cific, the North Pacific, the South Pacific, and the
23 East Pacific and Arctic areas.

24 (2) **ATLANTIC, CARIBBEAN, AND GULF OF MEX-**
25 **ICO SYSTEM.**—The Atlantic, Caribbean, and Gulf

1 system shall cover areas of the Atlantic Ocean, Car-
2ibbean Sea, and the Gulf of Mexico that the Admin-
3istrator determines—

4 (A) to be geologically active, or to have sig-
5nificant potential for geological activity; and

6 (B) to pose measurable risks of tsunamis
7for States along the coastal areas of the Atlan-
8tic Ocean or the Gulf of Mexico.

9 ~~(3)~~ COMPONENTS.—The systems shall—

10 (A) utilize an array of deep ocean detection
11buoys, including redundant and spare buoys;

12 (B) include an associated tide gauge and
13water level system designed for long-term con-
14tinuous operation tsunami transmission capa-
15bility;

16 (C) provide for establishment of a coopera-
17tive effort between the National Oceanic and
18Atmospheric Administration and the United
19States Geological Survey under which the Geo-
20logical Survey provides rapid and reliable seis-
21mic information to the Administration from
22international and domestic seismic networks;

23 (D) provide for information and data proe-
24ssing through the tsunami warning centers es-
25tablished under subsection (c);

1 ~~(E)~~ be integrated into United States and
2 global ocean and earth observing systems; and

3 ~~(F)~~ provide a communications infrastruc-
4 ture for at-risk tsunami communities that sup-
5 ports rapid and reliable alert and notification to
6 the public such as the National Oceanic and At-
7 mospheric Administration weather radio and
8 the All Hazard Alert Broadcasting Radio.

9 ~~(c)~~ TSUNAMI WARNING CENTERS.—

10 ~~(1)~~ IN GENERAL.—The Administrator shall es-
11 tablish tsunami warning centers to provide a link be-
12 tween the detection and warning system and the tsu-
13 nami hazard mitigation program established under
14 section 4 including—

15 ~~(A)~~ a Pacific Tsunami Warning Center in
16 Hawaii;

17 ~~(B)~~ a West Coast and Alaska Tsunami
18 Warning Center in Alaska; and

19 ~~(C)~~ any additional warning centers deter-
20 mined by the Administrator to be necessary.

21 ~~(2)~~ RESPONSIBILITIES.—The responsibilities of
22 each tsunami warning center shall include—

23 ~~(A)~~ continuously monitoring data from
24 seismological, deep ocean, and tidal monitoring
25 stations;

1 ~~(B)~~ evaluating earthquakes that have the
2 potential to generate tsunami;

3 ~~(C)~~ evaluating deep ocean buoy data and
4 tidal monitoring stations for indications of tsu-
5 nami resulting from sources other than earth-
6 quakes; and

7 ~~(D)~~ disseminating information and warn-
8 ing bulletins appropriate for local and distant
9 tsunamis to government agencies and the public
10 and alerting potentially impacted coastal areas
11 for evacuation.

12 ~~(d) TRANSFER OF TECHNOLOGY; MAINTENANCE AND~~
13 ~~UPGRADES.—~~In carrying out this section, the Adminis-
14 trator shall—

15 ~~(1)~~ promulgate specifications and standards for
16 forecast, detection, and warning systems, including
17 detection equipment;

18 ~~(2)~~ develop and execute a plan for the transfer
19 of technology from ongoing research to long-term
20 operations;

21 ~~(3)~~ ensure that detection equipment is main-
22 tained in operational condition to fulfill the fore-
23 casting, detection and warning requirements of the
24 regional tsunami detection and warning systems;

1 (4) obtain, to the greatest extent practicable,
2 priority treatment in budgeting for, acquiring, trans-
3 porting, and maintaining weather sensors, tide
4 gauges, water level gauges, and tsunami buoys incor-
5 porated into the system including obtaining ship
6 time; and

7 (5) ensure integration of the tsunami detection
8 system with other United States and global ocean
9 and coastal observation systems, the global earth ob-
10 serving system of systems, global seismic networks,
11 and the Advanced National Seismic System.

12 (c) CERTIFICATION.—Amounts appropriated for any
13 fiscal year pursuant to section 8 to carry out this section
14 may not be obligated or expended for the acquisition of
15 services for construction or deployment of tsunami detec-
16 tion equipment unless the Administrator certifies in writ-
17 ing to the Senate Committee on Commerce, Science, and
18 Transportation and the House of Representatives Com-
19 mittee on Science within 60 calendar days after the date
20 on which the President submits the Budget of the United
21 States for that fiscal year to the Congress that—

22 (1) each contractor for such services has met
23 the requirements of the contract for such construc-
24 tion or deployment;

1 (2) the equipment to be constructed or deployed
2 is capable of becoming fully operational without the
3 obligation or expenditure of additional appropriated
4 funds; and

5 (3) the Administrator does not reasonably fore-
6 see unanticipated delays in the deployment and oper-
7 ational schedule specified in the contract.

8 **SEC. 4. TSUNAMI HAZARD MITIGATION PROGRAM.**

9 (a) **IN GENERAL.**—The Administrator of the Na-
10 tional Oceanic and Atmospheric Administration is author-
11 ized to conduct a community-based tsunami hazard miti-
12 gation program to improve tsunami preparedness of at-
13 risk areas.

14 (b) **COORDINATING COMMITTEE.**—In conducting the
15 program, the Administrator shall establish a coordinating
16 committee comprising representatives of—

17 (1) the National Oceanic and Atmospheric Ad-
18 ministration;

19 (2) the United States Geological Survey;

20 (3) the Federal Emergency Management Agen-
21 cy;

22 (4) the National Science Foundation; and

23 (5) affected coastal States and territories.

24 (c) **PROGRAM COMPONENTS.**—The program shall—

1 (1) improve the quality and extent of inunda-
2 tion mapping, including assessment of vulnerable
3 inner coastal areas;

4 (2) promote and improve community outreach
5 and education networks and programs to ensure
6 community readiness, including the development of
7 multi-hazard risk and vulnerability assessment train-
8 ing and decision support tools, implementation of
9 technical training and public education programs,
10 and provide for certification of prepared commu-
11 nities;

12 (3) integrate tsunami preparedness and mitiga-
13 tion programs into ongoing hazard warning and risk
14 management programs in affected areas including
15 the National Response Plan;

16 (4) promote the adoption of tsunami warning
17 and mitigation measures by Federal, State, tribal,
18 and local governments and non-governmental entities
19 through a grant program for training, development
20 of guidelines, and other purposes;

21 (5) through the Federal Emergency Manage-
22 ment Agency as the lead agency, develop tsunami
23 specific rescue and recovery guidelines for the Na-
24 tional Response Plan, including long-term mitigation
25 measures, educational programs to discourage devel-

1 opment in high-risk areas, and use of remote sensing
2 and other technology in rescue and recovery oper-
3 ations;

4 (6) require budget coordination, through the
5 Administration, to carry out the purposes of this Act
6 and to ensure that participating agencies provide
7 necessary funds for matters within their respective
8 areas of authority and expertise; and

9 (7) provide for periodic external review of the
10 program and for inclusion of the results of such re-
11 views in the report required by section 6(e).

12 **SEC. 5. TSUNAMI RESEARCH PROGRAM.**

13 (a) **ESTABLISHMENT.**—The Administrator of the Na-
14 tional Oceanic and Atmospheric Administration shall, in
15 coordination with other agencies and academic institu-
16 tions, establish a tsunami research program to develop de-
17 tection, prediction, communication, and mitigation science
18 and technology that supports tsunami forecasts and warn-
19 ings, including advanced sensing techniques, information
20 and communication technology, data collection, analysis
21 and assessment for tsunami tracking and numerical fore-
22 cast modeling that will—

23 (1) help determine—

24 (A) whether an earthquake or other seis-
25 mic event will result in a tsunami; and

1 (B) the likely path, severity, duration, and
2 travel time of a tsunami;

3 (2) develop techniques and technologies that
4 may be used to communicate tsunami forecasts and
5 warnings as quickly and effectively as possible to af-
6 fected communities;

7 (3) develop techniques and technologies to sup-
8 port evacuation products, including real-time notice
9 of the condition of critical infrastructure along tsu-
10 nami evacuation routes for public officials and first
11 responders; and

12 (4) develop techniques for utilizing remote sens-
13 ing technologies in rescue and recovery operations.

14 (b) COMMUNICATIONS TECHNOLOGY.—The Adminis-
15 trator, in consultation with the Assistant Secretary of
16 Commerce for Communications and Information and the
17 Federal Communications Commission, shall investigate
18 the potential for improved communications systems for
19 tsunami and other hazard warnings by incorporating into
20 the existing network a full range of options for providing
21 those warnings to the public, including, as appropriate—

22 (1) telephones, including special alert rings;

23 (2) wireless and satellite technology, including
24 cellular telephones and pagers;

25 (3) the Internet, including e-mail;

1 (4) automatic alert televisions and radios;

2 (5) innovative and low-cost combinations of
3 such technologies that may provide access to remote
4 areas; and

5 (6) other technologies that may be developed.

6 **SEC. 6. TSUNAMI SYSTEM UPGRADE AND MODERNIZATION.**

7 (a) **SYSTEM UPGRADES.**—The Administrator of the
8 National Oceanic and Atmospheric Administration shall—

9 (1) authorize and direct the immediate repair of
10 existing deep ocean detection buoys and related com-
11 ponents of the system;

12 (2) ensure the deployment of an array of deep
13 ocean detection buoys in the regions described in
14 section 3(a) of this Act;

15 (3) ensure expansion or upgrade of the tide
16 gauge network in the regions described in section
17 3(a); and

18 (4) complete the upgrades not later than De-
19 cember 31, 2007.

20 (b) **CONGRESSIONAL NOTIFICATIONS.**—The Adminis-
21 trator shall notify the Senate Committee on Commerce,
22 Science, and Transportation and the House of Represent-
23 atives Committee on Science of—

24 (1) impaired regional detection coverage due to
25 equipment or system failures; and

1 (2) significant contractor failures or delays in
2 completing work associated with the tsunami detec-
3 tion and warning system.

4 (c) ANNUAL REPORT.—The Administrator shall
5 transmit an annual report to the Senate Committee on
6 Commerce, Science, and Transportation and the House of
7 Representatives Committee on Science on the status of the
8 tsunami detection and warning system, including accu-
9 racy, false alarms, equipment failures, improvements over
10 the previous year, and goals for further improvement (or
11 plans for curing failures) of the system, as well as progress
12 and accomplishments of the national tsunami hazard miti-
13 gation program.

14 (d) EXTERNAL REVIEW.—The National Academy of
15 Science shall review the tsunami detection, forecast, and
16 warning system operated by the National Oceanic and At-
17 mospheric Administration under this Act to assess further
18 modernization and coverage needs, as well as long-term
19 operational reliability issues, taking into account measures
20 implemented under this Act, and transmit a report con-
21 taining its recommendations, including an estimate of the
22 costs of implementing those recommendations, to the Sen-
23 ate Committee on Commerce, Science, and Transportation
24 and the House of Representatives Committee on Science
25 within 24 months after the date of enactment of this Act.

1 **SEC. 7. GLOBAL TSUNAMI WARNING AND MITIGATION NET-**
2 **WORK.**

3 (a) **INTERNATIONAL TSUNAMI WARNING SYSTEM.—**

4 The Administrator of the National Oceanic and Atmos-
5 pheric Administration, in coordination with other mem-
6 bers of the United States Interagency Committee of the
7 National Tsunami Mitigation Program, shall provide tech-
8 nical assistance and advice to the Intergovernmental
9 Oceanographic Commission of UNESCO, the World Mete-
10 orological Organization, and other international entities,
11 as part of international efforts to develop a fully functional
12 global tsunami warning system comprised of regional tsu-
13 nami warning networks, modeled on the International
14 Tsunami Warning System of the Pacific.

15 (b) **DETECTION EQUIPMENT; TECHNICAL ADVICE.—**

16 In carrying out this section, the Administrator—

17 (1) shall give priority to assisting nations in
18 identifying vulnerable coastal areas, creating inunda-
19 tion maps, obtaining or designing real-time detection
20 and reporting equipment, and establishing commu-
21 nication and warning networks and contact points in
22 each vulnerable nation; and

23 (2) may establish a process for transfer of de-
24 tection and communication technology to affected
25 nations for the purposes of establishing the inter-
26 national tsunami warning system.

1 (c) ~~DATA-SHARING REQUIREMENT.~~—The Adminis-
2 trator may not provide assistance under this section for
3 any region unless all affected nations in that region par-
4 ticipating in the tsunami warning network agree to share
5 relevant data associated with the development and oper-
6 ation of the network.

7 (d) ~~RECEIPT OF INTERNATIONAL REIMBURSEMENT~~
8 ~~AUTHORIZED.~~—The Administrator may accept payment
9 to, or reimbursement of, the National Oceanic and Atmos-
10 pheric Administration in cash or in kind from inter-
11 national organizations and foreign authorities; or payment
12 or reimbursement made on behalf of such an authority,
13 for expenses incurred by the Administrator in carrying out
14 any activity under this Act. Any such payments or reim-
15 bursements shall be considered a reimbursement to the ap-
16 propriated funds of the Administration.

17 **SEC. 8. AUTHORIZATION OF APPROPRIATIONS.**

18 There are authorized to be appropriated to the Ad-
19 ministrator of the National Oceanic and Atmospheric Ad-
20 ministration \$35,000,000 for each of fiscal years 2006
21 through 2012 to carry out this Act.

22 **SECTION 1. SHORT TITLE.**

23 *This Act may be cited as the “Tsunami Preparedness*
24 *Act”.*

1 **SEC. 2. FINDINGS AND PURPOSES.**

2 (a) *FINDINGS.*—*The Congress finds the following:*

3 (1) *Tsunami are a series of large waves of long*
4 *wavelength created by the displacement of water by*
5 *violent undersea disturbances such as earthquakes,*
6 *volcanic eruptions, landslides, explosions, and the im-*
7 *pect of cosmic bodies.*

8 (2) *Tsunami have caused, and can cause in the*
9 *future, enormous loss of human life, injury, destruc-*
10 *tion of property, and economic and social disruption*
11 *in coastal and island communities.*

12 (3) *While 85 percent of tsunami occur in the Pa-*
13 *cific Ocean, and coastal and island communities in*
14 *this region are the most vulnerable to the destructive*
15 *results, tsunami can occur at any point in any ocean*
16 *or related body of water where there are earthquakes,*
17 *volcanoes, or any other activity that displaces a large*
18 *volume of water.*

19 (4) *A number of States and territories are sub-*
20 *ject to the threat of tsunamis, including Alaska, Cali-*
21 *ifornia, Hawaii, Oregon, Washington, American*
22 *Samoa, the Commonwealth of the Northern Mariana*
23 *Islands, Guam, Puerto Rico, and the U.S. Virgin Is-*
24 *lands.*

25 (5) *The National Oceanic and Atmospheric Ad-*
26 *ministration is responsible for maintaining a tsu-*

1 *nami detection and warning system for the Nation,*
2 *issuing warnings to United States communities at*
3 *risk from tsunami, and preparing those communities*
4 *to respond appropriately, through—*

5 *(A) the Pacific Tsunami Warning Center in*
6 *Ewa Beach, Hawaii, which serves as a warning*
7 *center for Hawaii, all other United States assets*
8 *in the Pacific, and Puerto Rico;*

9 *(B) the Alaska/West Coast Tsunami Warn-*
10 *ing Center in Palmer, Alaska, which is respon-*
11 *sible for issuing warnings for Alaska, British Co-*
12 *lumbia, California, Oregon, and Washington;*

13 *(C) the Federal-State national tsunami haz-*
14 *ard mitigation program;*

15 *(D) a tsunami research and assessment pro-*
16 *gram, including programs conducted by the Pa-*
17 *cific Marine Environmental Laboratory;*

18 *(E) the TsunamiReady Program, which*
19 *educates and prepares communities for survival*
20 *before and during a tsunami;*

21 *(F) an archive of historical tsunami data,*
22 *held at the National Oceanic and Atmospheric*
23 *Administration's National Geophysical Data*
24 *Center; and*

1 (G) other related programs, including those
2 operated in coordination with academic institu-
3 tions.

4 (6) The National Oceanic and Atmospheric Ad-
5 ministration also represents the United States as a
6 member of the International Coordination Group for
7 the Tsunami Warning System in the Pacific, admin-
8 istered by the Intergovernmental Oceanographic Com-
9 mission of UNESCO, for which the Pacific Tsunami
10 Warning Center acts as the operational center and
11 shares seismic and water level information with 26
12 member states, and maintains UNESCO's Inter-
13 national Tsunami Information Center, in Honolulu,
14 Hawaii, which provides technical and educational as-
15 sistance to member states.

16 (7) The Tsunami Warning Centers receive seis-
17 mographic information from the Global Seismic Net-
18 work, an international system of earthquake moni-
19 toring stations, from the United States Geological
20 Survey National Earthquake Information Center, the
21 Alaska Earthquake Information Center, and coopera-
22 tive regional seismic networks, and use these data to
23 issue tsunami warnings and integrate the informa-
24 tion with data from their own tidal and deep ocean
25 monitoring stations, to cancel or verify the existence

1 *of a damaging tsunami. Warnings are disseminated*
2 *by the National Oceanic and Atmospheric Adminis-*
3 *tration to State emergency operation centers.*

4 (8) *Current gaps in the International Tsunami*
5 *Warning System, such as the lack of regional warn-*
6 *ing systems in the Indian Ocean, the southwest Pa-*
7 *cific Ocean, Central and South America, the Medi-*
8 *terranean Sea, and Caribbean, pose risks for coastal*
9 *and island communities.*

10 (9) *The tragic and extreme loss of life experi-*
11 *enced by countries in the Indian Ocean following the*
12 *magnitude 9.0 earthquake and resulting tsunami in*
13 *that region on December 26, 2004, illustrates the de-*
14 *structive consequences which can occur in the absence*
15 *of an effective tsunami warning and notification sys-*
16 *tem.*

17 (10) *An effective tsunami warning and notifica-*
18 *tion system is part of a multi-hazard disaster warn-*
19 *ing and preparedness program and requires real-time*
20 *seismic, sea level, and oceanographic data, high-speed*
21 *data analysis capabilities, a high-speed tsunami*
22 *warning communication system, a sustained program*
23 *of education and risk assessment to develop response*
24 *strategies, and an established local communications*
25 *infrastructure for timely and effective dissemination*

1 *of warnings to activate evacuation of tsunami hazard*
2 *zones.*

3 *(11) The Tsunami Warning System for the Pa-*
4 *cific is a model for other regions of the world to*
5 *adopt, and can be expanded and modernized to in-*
6 *crease detection, forecast, and warning capabilities for*
7 *vulnerable states and territories, reduce the incidence*
8 *of costly false alarms, improve reliability of measure-*
9 *ment and assessment technology, and increase com-*
10 *munity preparedness.*

11 *(12) Tsunami warning and preparedness capa-*
12 *bility can be developed in other vulnerable areas of*
13 *the world, such as the Indian Ocean, by identifying*
14 *tsunami hazard zones, educating populations, devel-*
15 *oping alert and notification communications infra-*
16 *structure, and by deploying near real-time tsunami*
17 *detection sensors and gauges, establishing hazard com-*
18 *munication and warning networks, expanding global*
19 *monitoring of seismic activity, encouraging the in-*
20 *creased exchange of seismic and tidal data between*
21 *nations, and improving international coordination*
22 *when a tsunami is detected.*

23 *(13) UNESCO has recognized the need to estab-*
24 *lish tsunami warning systems for regions beyond the*

1 *Pacific Basin that are vulnerable to tsunami, includ-*
2 *ing the Indian Ocean, and has convened a working*
3 *group to lead an effort to expand the International*
4 *Tsunami Warning System in the Pacific to such vul-*
5 *nerable regions.*

6 (14) *The international community and all vul-*
7 *nerable nations should take coordinated efforts to es-*
8 *tablish and participate in regional tsunami warning*
9 *systems and other hazard warnings systems developed*
10 *to meet the goals of the United Nations International*
11 *Strategy for Disaster Reduction.*

12 (15) *On February 16, 2005, the United States,*
13 *together with 53 other Nations participating in the*
14 *Third Earth Observation Summit in Brussels, Bel-*
15 *gium, adopted a 10-year implementation plan as the*
16 *basis for establishing the Global Earth Observation*
17 *System of Systems.*

18 (16) *The Global Earth Observation System of*
19 *Systems will consist of existing and future earth ob-*
20 *servations systems, including the United States tsu-*
21 *unami detection and warning system.*

22 (b) *PURPOSES.*—*The purposes of this Act are—*

23 (1) *to improve tsunami detection, forecast, warn-*
24 *ings, notification, preparedness, and mitigation in*

1 *order to protect life and property both in the United*
2 *States and elsewhere in the world;*

3 *(2) to improve and modernize the existing Pa-*
4 *cific Tsunami Warning System to increase coverage,*
5 *reduce false alarms and increase accuracy of forecasts*
6 *and warnings, and expand detection and warning*
7 *systems to include other vulnerable States and United*
8 *States territories, including the Caribbean/Atlantic/*
9 *Gulf region;*

10 *(3) to increase and accelerate mapping, mod-*
11 *eling, research, assessment, education, and outreach*
12 *efforts in order to improve forecasting, preparedness,*
13 *mitigation, response, and recovery of tsunami and re-*
14 *lated coastal hazards;*

15 *(4) to provide technical and other assistance to*
16 *speed international efforts to establish regional tsu-*
17 *unami warning systems in vulnerable areas worldwide,*
18 *including the Indian Ocean; and*

19 *(5) to improve Federal, State, and international*
20 *coordination for tsunami and other coastal hazard*
21 *warnings and preparedness.*

22 **SEC. 3. TSUNAMI DETECTION AND WARNING SYSTEM.**

23 *(a) IN GENERAL.—The Administrator of the National*
24 *Oceanic and Atmospheric Administration shall operate re-*
25 *gional tsunami detection and warning systems for the Pa-*

1 *cific Ocean region and for the Atlantic Ocean, Caribbean,*
2 *and Gulf of Mexico region that will provide maximum de-*
3 *tection capability for United States coastal tsunami.*

4 *(b) SYSTEM REQUIREMENTS.—*

5 *(1) PACIFIC SYSTEM.—The Pacific tsunami*
6 *warning system shall cover the entire Pacific Ocean*
7 *area, including the Western Pacific, the Central Pa-*
8 *cific, the North Pacific, the South Pacific, and the*
9 *East Pacific and Arctic areas.*

10 *(2) ATLANTIC, CARIBBEAN, AND GULF OF MEXICO*
11 *SYSTEM.—The Atlantic, Caribbean, and Gulf system*
12 *shall cover areas of the Atlantic Ocean, Caribbean*
13 *Sea, and the Gulf of Mexico that the Administrator*
14 *determines—*

15 *(A) to be geologically active, or to have sig-*
16 *nificant potential for geological activity; and*

17 *(B) to pose measurable risks of tsunamis for*
18 *States along the coastal areas of the Atlantic*
19 *Ocean or the Gulf of Mexico.*

20 *(3) COMPONENTS.—The systems shall—*

21 *(A) utilize an array of deep ocean detection*
22 *buoys, including redundant and spare buoys;*

23 *(B) include an associated tide gauge and*
24 *water level system designed for long-term contin-*
25 *uous operation tsunami transmission capability;*

1 (C) allow for such additional sensors as
2 may be necessary to provide other ocean and
3 earth observation capabilities;

4 (D) provide for the establishment of a coop-
5 erative effort between the National Oceanic and
6 Atmospheric Administration and the United
7 States Geological Survey under which the Geo-
8 logical Survey and State earthquake information
9 centers provide rapid and reliable real-time seis-
10 mic information to the Administration from
11 international and domestic seismic networks;

12 (E) provide for information and data proc-
13 essing through the tsunami warning centers es-
14 tablished under subsection (c);

15 (F) be integrated into United States and
16 global ocean and earth observing systems, includ-
17 ing the Global Earth Observation System of Sys-
18 tems;

19 (G) provide a communications infrastruc-
20 ture, in coordination with local communications
21 providers, for at-risk tsunami communities that
22 supports rapid and reliable alert and notifica-
23 tion to the public, such as the National Oceanic
24 and Atmospheric Administration's Weather,
25 Alert, and Readiness Network, which includes the

1 *weather radio and the All Hazard Alert Broad-*
2 *casting Radio; and*

3 *(H) the integration of NOAA's Advanced*
4 *Weather Interactive Processing System with*
5 *other communications technologies.*

6 *(4) FEDERAL COOPERATION.—In deploying and*
7 *maintaining detection buoys utilized in the tsunami*
8 *warning system, the Administrator should leverage*
9 *the assistance and assets of the United States Coast*
10 *Guard, the Navy, and other Federal agency assets in*
11 *the region. Within 180 days after the date of enact-*
12 *ment of this Act, the Administrator shall provide a*
13 *report to the Senate committee on Commerce, Science,*
14 *and Transportation, the House of Representatives*
15 *Committee on Science, and the House of Representa-*
16 *tives Committee on Resources that summarizes the ex-*
17 *tent to which the United States Coast Guard or any*
18 *other Federal agency is assistance in deploying and*
19 *maintaining such buoys.*

20 *(c) TSUNAMI WARNING CENTERS.—*

21 *(1) IN GENERAL.—The Administrator shall es-*
22 *tablish tsunami warning centers to provide a link be-*
23 *tween the detection and warning system and the tsu-*
24 *nami hazard mitigation program established under*
25 *section 4 including—*

1 (A) a Pacific Tsunami Warning Center in
2 Hawaii;

3 (B) a West Coast and Alaska Tsunami
4 Warning Center in Alaska; and

5 (C) any additional warning centers deter-
6 mined by the Administrator to be necessary.

7 (2) *RESPONSIBILITIES.*—The responsibilities of
8 each tsunami warning center shall include—

9 (A) continuously monitoring data from seis-
10 mological stations, deep ocean detection buoys,
11 and tidal monitoring stations and providing
12 such data to the national tsunami archive;

13 (B) evaluating earthquakes that have the
14 potential to generate tsunami;

15 (C) evaluating deep ocean buoy data and
16 tidal monitoring stations for indications of tsu-
17 nami resulting from sources other than earth-
18 quakes; and

19 (D) disseminating information and warn-
20 ing bulletins appropriate for local and distant
21 tsunamis to government agencies and the public
22 and alerting potentially impacted coastal areas
23 for evacuation.

24 (d) *DATA MANAGEMENT.*—The Administrator shall
25 maintain national and regionally-based data management

1 *systems to support and establish data management require-*
2 *ments for the tsunami detection and monitoring system, in-*
3 *cluding requirements for—*

4 *(1) quality control and quality assurance;*

5 *(2) archiving and maintaining data;*

6 *(3) supporting integration of observations from*
7 *the system with other national and international*
8 *water level measurements, such as the Global Sea*
9 *Level Monitoring System;*

10 *(4) integration of observations from the system*
11 *with other elements of the global and coastal compo-*
12 *nents of the integrated ocean and coastal observing*
13 *system and the Global Earth Observation System of*
14 *Systems; and*

15 *(5) the development of and access to data sets*
16 *and integrated data products designed to support*
17 *multi-hazard regional vulnerability assessment and*
18 *adaptation programs such as the program established*
19 *under section 8.*

20 **SEC. 4. TSUNAMI HAZARD MITIGATION PROGRAM.**

21 *(a) IN GENERAL.—The Administrator of the National*
22 *Oceanic and Atmospheric Administration shall, in coordi-*
23 *nation with other agencies and academic institutions, de-*
24 *velop and conduct a community-based tsunami hazard*

1 *mitigation program to improve tsunami preparedness of at-*
2 *risk areas.*

3 (b) *COORDINATING COMMITTEE.*—*In developing and*
4 *conducting the program, the Administrator shall establish*
5 *a coordinating committee comprising representatives of—*

6 (1) *the National Oceanic and Atmospheric Ad-*
7 *ministration;*

8 (2) *the United States Geological Survey;*

9 (3) *the Federal Emergency Management Agency;*

10 (4) *the National Science Foundation;*

11 (5) *the National Institute of Standards and*
12 *Technology; and*

13 (6) *affected coastal States and territories.*

14 (c) *PROGRAM COMPONENTS.*—*The program shall—*

15 (1) *improve the quality and extent of inundation*
16 *mapping, including assessment of vulnerable inner*
17 *coastal areas;*

18 (2) *promote and improve community outreach*
19 *and education networks and programs to ensure com-*
20 *munity awareness and readiness, including the devel-*
21 *opment of multi-hazard risk and vulnerability assess-*
22 *ment training and decision support tools, implemen-*
23 *tation of technical training and public education pro-*
24 *grams, and provide for certification of prepared com-*
25 *munities;*

1 (3) *integrate tsunami awareness, preparedness,*
2 *and mitigation programs into ongoing hazard warn-*
3 *ing and risk management programs in affected areas*
4 *including the National Response Plan and State*
5 *coastal zone management plans;*

6 (4) *promote the adoption of tsunami warning*
7 *and mitigation measures by Federal, State, tribal,*
8 *and local governments and non-governmental entities*
9 *through a grant program for training, development of*
10 *guidelines, and other purposes;*

11 (5) *through the Federal Emergency Management*
12 *Agency as the lead agency, develop tsunami specific*
13 *rescue and recovery guidelines for the National Re-*
14 *sponse Plan, including long-term mitigation meas-*
15 *ures, educational programs to discourage development*
16 *in high-risk areas, and use of remote sensing and*
17 *other technology in rescue and recovery operations;*

18 (6) *require budget coordination, through the Ad-*
19 *ministration, to carry out the purposes of this Act*
20 *and to ensure that participating agencies provide nec-*
21 *essary funds for matters within their respective areas*
22 *of authority and expertise; and*

23 (7) *provide for periodic external review of the*
24 *program and for inclusion of the results of such re-*
25 *views in the report required by section 6(e).*

1 **SEC. 5. TSUNAMI RESEARCH PROGRAM.**

2 (a) *ESTABLISHMENT.*—*The Administrator of the Na-*
3 *tional Oceanic and Atmospheric Administration shall, in*
4 *coordination with other agencies and academic institutions,*
5 *establish a tsunami research program to develop detection,*
6 *prediction, communication, and mitigation science and*
7 *technology that supports tsunami forecasts and warnings,*
8 *including advanced sensing techniques, information and*
9 *communication technology, data collection, analysis and as-*
10 *essment for tsunami tracking and numerical forecast mod-*
11 *eling that will—*

12 (1) *help determine—*

13 (A) *whether an earthquake or other seismic*
14 *event will result in a tsunami; and*

15 (B) *the likely path, severity, duration, and*
16 *travel time of a tsunami;*

17 (2) *develop techniques and technologies that may*
18 *be used to communicate tsunami forecasts and warn-*
19 *ings as quickly and effectively as possible to affected*
20 *communities;*

21 (3) *develop techniques and technologies to sup-*
22 *port evacuation products, including real-time notice*
23 *of the condition of critical infrastructure along tsu-*
24 *unami evacuation routes for public officials and first*
25 *responders; and*

1 (4) *develop techniques for utilizing remote sens-*
 2 *ing technologies in rescue and recovery operations.*

3 (b) *COMMUNICATIONS TECHNOLOGY.—The Adminis-*
 4 *trator, in consultation with in consultation with the Assist-*
 5 *ant Secretary of Commerce for Communications and Infor-*
 6 *mation and the Federal Communications Commission, shall*
 7 *investigate the potential for improved communications sys-*
 8 *tems for tsunami and other hazard warnings by incor-*
 9 *porating into the existing network a full range of options*
 10 *for providing those warnings to the public, including, as*
 11 *appropriate—*

12 (1) *telephones, including special alert rings;*

13 (2) *wireless and satellite technology, including*
 14 *cellular telephones and pagers;*

15 (3) *the Internet, including e-mail;*

16 (4) *automatic alert televisions and radios;*

17 (5) *innovative and low-cost combinations of such*
 18 *technologies that may provide access to remote areas;*

19 *and*

20 (6) *other technologies that may be developed.*

21 **SEC. 6. TSUNAMI SYSTEM UPGRADE AND MODERNIZATION.**

22 (a) *SYSTEM UPGRADES.—The Administrator of the*
 23 *National Oceanic and Atmospheric Administration shall—*

1 (1) *authorize and direct the immediate repair of*
2 *existing deep ocean detection buoys and related com-*
3 *ponents of the system;*

4 (2) *ensure the deployment of an array of deep*
5 *ocean detection buoys capable of carrying multi-observ-*
6 *ation technology in the regions described in section*
7 *3(a) of this Act;*

8 (3) *ensure expansion or upgrade of the seismic*
9 *monitoring and tide gauge networks in the regions de-*
10 *scribed in section 3(a); and*

11 (4) *complete the upgrades not later than Decem-*
12 *ber 31, 2007.*

13 (b) *TRANSFER OF TECHNOLOGY; MAINTENANCE AND*
14 *UPGRADES.—In carrying out this section, the Adminis-*
15 *trator shall—*

16 (1) *promulgate specifications and standards for*
17 *forecast, detection, and warning systems, including*
18 *detection equipment;*

19 (2) *develop and execute a plan for the transfer*
20 *of technology from ongoing research to long-term oper-*
21 *ations;*

22 (3) *ensure that detection equipment is main-*
23 *tained in operational condition to fulfill the fore-*
24 *casting, detection and warning requirements of the re-*
25 *gional tsunami detection and warning systems;*

1 (4) obtain, to the greatest extent practicable, pri-
2 ority treatment in budgeting for, acquiring, trans-
3 porting, and maintaining weather sensors, tide
4 gauges, water level gauges, and tsunami buoys incor-
5 porated into the system including obtaining ship
6 time; and

7 (5) ensure integration of the tsunami detection
8 system with other United States and global ocean and
9 coastal observation systems, the Global Earth Obser-
10 vation System of Systems, global seismic networks,
11 and the Advanced National Seismic System.

12 (c) *CERTIFICATION.*—Amounts appropriated for any
13 fiscal year pursuant to section 9 to carry out this section
14 may not be obligated or expended for the acquisition of serv-
15 ices for construction or deployment of tsunami detection
16 equipment unless the Administrator certifies in writing to
17 the Senate Committee on Commerce, Science, and Trans-
18 portation, the House of Representatives Committee on
19 Science, and the House of Representatives Committee on
20 Resources within 60 calendar days after the date on which
21 the President submits the Budget of the United States for
22 that fiscal year to the Congress that—

23 (1) each contractor for such services has met the
24 requirements of the contract for such construction or
25 deployment;

1 (2) *the equipment to be constructed or deployed*
2 *is capable of becoming fully operational without the*
3 *obligation or expenditure of additional appropriated*
4 *funds; and*

5 (3) *the Administrator does not reasonably foresee*
6 *unanticipated delays in the deployment and oper-*
7 *ational schedule specified in the contract.*

8 (d) *CONGRESSIONAL NOTIFICATIONS.—The Adminis-*
9 *trator shall notify the Senate Committee on Commerce,*
10 *Science, and Transportation, the House of Representatives*
11 *Committee on Science, and the House of Representatives*
12 *Committee on Resources of—*

13 (1) *impaired regional detection coverage due to*
14 *equipment or system failures; and*

15 (2) *significant contractor failures or delays in*
16 *completing work associated with the tsunami detec-*
17 *tion and warning system.*

18 (e) *ANNUAL REPORT.—The Administrator shall trans-*
19 *mit an annual report to the Senate Committee on Com-*
20 *merce, Science, and Transportation and the House of Rep-*
21 *resentatives Committee on Science the status of the tsunami*
22 *detection and warning system, including accuracy, false*
23 *alarms, equipment failures, improvements over the previous*
24 *year, and goals for further improvement (or plans for cur-*
25 *ing failures) of the system, as well as progress and accom-*

1 *plishments of the national tsunami hazard mitigation pro-*
2 *gram.*

3 (f) *EXTERNAL REVIEW.*—*The National Academy of*
4 *Science shall review the tsunami detection, forecast, and*
5 *warning system operated by the National Oceanic and At-*
6 *mospheric Administration under this Act to assess further*
7 *modernization and coverage needs, as well as long-term*
8 *operational reliability issues, taking into account measures*
9 *implemented under this Act, and transmit a report con-*
10 *taining its recommendations, including an estimate of the*
11 *costs of implementing those recommendations, to the Senate*
12 *Committee on Commerce, Science, and Transportation and*
13 *the House of Representatives Committee on Science within*
14 *24 months after the date of enactment of this Act.*

15 **SEC. 7. GLOBAL TSUNAMI WARNING AND MITIGATION NET-**
16 **WORK.**

17 (a) *INTERNATIONAL TSUNAMI WARNING SYSTEM.*—
18 *The Administrator of the National Oceanic and Atmos-*
19 *pheric Administration, in coordination with other members*
20 *of the United States Interagency Committee of the National*
21 *Tsunami Mitigation Program, shall provide technical as-*
22 *sistance and advice to the Intergovernmental Oceano-*
23 *graphic Commission of UNESCO, the World Meteorological*
24 *Organization, the Group on Earth Observations, and other*
25 *international entities, as part of international efforts to de-*

1 *velop a fully functional global tsunami warning system*
2 *comprised of regional tsunami warning networks, modeled*
3 *on the International Tsunami Warning System of the Pa-*
4 *cific, and consistent with the 10-year implementation plan*
5 *for the Global Earth Observation System of Systems.*

6 (b) *INTERNATIONAL TSUNAMI INFORMATION CEN-*
7 *TER.—The Administrator shall operate an International*
8 *Tsunami Information Center to improve tsunami prepared-*
9 *ness for all Pacific Ocean nations participating in the*
10 *International Tsunami Warning System of the Pacific, and*
11 *which may also provide such assistance to other nations*
12 *participating in a global tsunami warning system estab-*
13 *lished through the International Oceanographic Committee*
14 *of UNESCO. As part of its responsibilities in the Pacific,*
15 *the Center shall—*

16 (1) *monitor international tsunami warning ac-*
17 *tivities in the Pacific;*

18 (2) *assist member states in establishing national*
19 *warning systems, and make information available on*
20 *current technologies for tsunami warning systems;*

21 (3) *maintain a library of materials to promul-*
22 *gate knowledge about tsunamis in general and for use*
23 *by the scientific community; and*

24 (4) *disseminate information, including edu-*
25 *cational materials and research reports.*

1 (c) *TECHNICAL ASSISTANCE.*—*In carrying out this*
2 *section, the Administrator—*

3 (1) *shall give priority to assisting nations in*
4 *identifying vulnerable coastal areas, creating inunda-*
5 *tion maps, obtaining or designing real-time detection*
6 *and reporting equipment, and establishing commu-*
7 *nication and warning networks and contact points in*
8 *each vulnerable nation;*

9 (2) *may establish a process for transfer of detec-*
10 *tion and communication technology to affected na-*
11 *tions for the purposes of establishing the international*
12 *tsunami warning system; and*

13 (3) *shall provide technical and other assistance*
14 *to support international tsunami education, response,*
15 *vulnerability, and adaptation programs.*

16 (d) *DATA-SHARING REQUIREMENT.*—*The Adminis-*
17 *trator may not provide assistance under this section for any*
18 *region unless all affected nations in that region partici-*
19 *pating in the tsunami warning network agree to share rel-*
20 *evant data associated with the development and operation*
21 *of the network.*

22 (e) *FUNDING ASSISTANCE.*—*The Administrator, in co-*
23 *ordination with the Secretary of State, shall seek funding*
24 *assistance from participating nations needed to ensure es-*

1 *tablishment of a fully functional global tsunami warning*
2 *system.*

3 (f) *RECEIPT OF INTERNATIONAL REIMBURSEMENT AU-*
4 *THORIZED.—The Administrator may accept payment to, or*
5 *reimbursement of, the National Oceanic and Atmospheric*
6 *Administration in cash or in kind from international orga-*
7 *nizations and foreign authorities, or payment or reimburse-*
8 *ment made on behalf of such an authority, for expenses in-*
9 *curred by the Administrator in carrying out any activity*
10 *under this Act. Any such payments or reimbursements shall*
11 *be considered a reimbursement to the appropriated funds*
12 *of the Administration.*

13 **SEC. 8. COASTAL COMMUNITY VULNERABILITY AND ADAP-**
14 **TATION PROGRAM.**

15 (a) *ESTABLISHMENT.—The Administrator of the Na-*
16 *tional Oceanic and Atmospheric Administration shall es-*
17 *tablish an integrated coastal vulnerability and adaptation*
18 *program focused on improving the resilience of coastal com-*
19 *munities to natural hazards and disasters. The program*
20 *shall be regional in nature, build upon and integrate exist-*
21 *ing Federal and State programs, and provide usable prod-*
22 *ucts that will improve preparedness of communities, busi-*
23 *nesses, and government entities. The program may include*
24 *the following activities:*

1 (1) *Development of multi-hazard vulnerability*
2 *maps to characterize and assess risks of coastal com-*
3 *munities to a range of natural hazards and provide*
4 *a baseline for assessing future risks.*

5 (2) *Multi-disciplinary vulnerability assessment*
6 *research and education that will help integrate risk*
7 *management with community development planning*
8 *and policies.*

9 (3) *Risk management and leadership training*
10 *for the public, local officials, and institutions that*
11 *will enhance understanding and preparedness.*

12 (4) *Risk assessment technology development, in-*
13 *cluding research and development of emerging tech-*
14 *nologies and practical application of existing or*
15 *emerging technologies, such as modeling, remote sens-*
16 *ing, geospatial technology, engineering, and observing*
17 *systems.*

18 (5) *Risk management data and information*
19 *services, including access to data and products de-*
20 *derived from observing and detection systems, as well as*
21 *development and maintenance of new integrated data*
22 *products that would support risk assessment and risk*
23 *management programs.*

24 (6) *Risk communication systems that coordinate*
25 *with and build upon existing alert, warning, and*

1 *forecast systems and actively engage policy officials,*
2 *government agencies, businesses, communities, non-*
3 *governmental organizations, and the media in the de-*
4 *sign and implementation of the system.*

5 *(b) REGIONAL PILOT PROJECTS.—*

6 *(1) IN GENERAL.—Within 1 year after the date*
7 *of enactment of this Act, the Administrator shall, in*
8 *consultation with the appropriate Federal, State,*
9 *tribal, and local governmental entities, establish 3*
10 *pilot projects to conduct regional assessments of the*
11 *vulnerability of coastal areas of the United States to*
12 *hazards associated with tsunami and other coastal*
13 *hazards, including sea level rise, increases in severe*
14 *weather events, and climate variability and change.*
15 *Priority shall be given to collaborative partnership*
16 *proposals from regionally-based multi-organizational*
17 *coalitions. In preparing the regional assessments, the*
18 *Administrator shall collect and compile current infor-*
19 *mation on tsunami, climate change, sea level rise,*
20 *natural hazards, coastal erosion and mapping, and*
21 *ongoing regional efforts to address them.*

22 *(2) SCOPE.—Regional assessments under the*
23 *pilot program shall include an evaluation of—*

1 (A) *the social impacts associated with*
2 *threats to and potential losses of housing, com-*
3 *munities, and infrastructure;*

4 (B) *the physical impacts such as coastal*
5 *erosion, flooding and loss of estuarine habitat,*
6 *saltwater intrusion of aquifers and saltwater en-*
7 *croachment, and species migration;*

8 (C) *the economic impact on local, State,*
9 *tribal, and regional economies, including the im-*
10 *act on coastal infrastructure and the abundance*
11 *or distribution of economically important living*
12 *marine resources; and*

13 (D) *opportunities to enhance the resilience*
14 *of at-risk communities, economic sectors, and*
15 *natural resources.*

16 (c) *SELECTION CRITERIA.—The Administrator shall*
17 *rely on the following criteria in identifying appropriate re-*
18 *gional pilot projects:*

19 (1) *Vulnerability to tsunami, hurricanes, ex-*
20 *treme weather, flooding, climate, and other coastal*
21 *hazards.*

22 (2) *Dependence on economic sectors and natural*
23 *resources that are particularly sensitive to coastal*
24 *hazards.*

1 (3) *Opportunities to link and leverage related re-*
2 *gional risk observation, research, forecasting, assess-*
3 *ment, educational and risk management programs.*

4 (4) *Demonstration of strong, interagency collabo-*
5 *ration in the area of risk management.*

6 (5) *Access to NOAA and other Federal agency*
7 *programs, facilities, and infrastructure related to tsu-*
8 *nami and other coastal hazards monitoring, warning,*
9 *forecasting, research assessment, and data manage-*
10 *ment.*

11 (d) *REGIONAL ADAPTATION PLANS.—The Adminis-*
12 *trator shall, within 3 years after the commencement of each*
13 *project under subsection (b), submit to the Congress regional*
14 *adaptation plans—*

15 (1) *based on the information contained in the re-*
16 *gional assessments conducted under subsection (b);*

17 (2) *developed with the participation of other*
18 *Federal agencies, State, tribal, and local government*
19 *agencies, and non-governmental entities (including*
20 *academia and the private sector) that will be critical*
21 *in the implementation of the plan at the State, tribal,*
22 *and local levels;*

23 (3) *that recommend targets and strategies to ad-*
24 *dress coastal impacts associated with tsunamis, cli-*
25 *mate change, sea level rise, or climate variability;*

1 (4) that include recommendations for both short-
2 and long-term adaptation strategies; and

3 (5) that include recommendations on—

4 (A) Federal flood insurance program modi-
5 fications;

6 (B) areas that have been identified as high
7 risk through mapping and assessment;

8 (C) enhancing the effectiveness of State
9 coastal zone management programs in miti-
10 gating or preventing coastal risks;

11 (D) mitigation incentives such as rolling
12 easements, strategic retreat, State or Federal ac-
13 quisition in fee simple or other interest in land,
14 construction standards, and zoning;

15 (E) land and property owner education;

16 (F) economic planning for small commu-
17 nities dependent upon affected coastal resources,
18 including fisheries; and

19 (G) funding requirements and mechanisms.

20 (e) *TECHNICAL PLANNING AND FINANCIAL ASSIST-*
21 *ANCE.*—The Administrator, through the National Ocean
22 *Service, shall establish a coordinated program—*

23 (1) to provide technical planning assistance and
24 financial assistance to coastal States, tribes, and local
25 governments as they develop and implement adapta-

1 *tion or mitigation strategies and plans under this sec-*
2 *tion; and*

3 (2) *to make products, information, tools, and*
4 *technical expertise generated from the development of*
5 *the regional assessment and the regional adaptation*
6 *plan available to coastal States for the purposes of de-*
7 *veloping their own State, tribal, and local plans.*

8 **SEC. 9. AUTHORIZATION OF APPROPRIATIONS.**

9 *There are authorized to be appropriated to the Admin-*
10 *istrator of the National Oceanic and Atmospheric Adminis-*
11 *tration—*

12 (1) *\$35,000,000 for each of fiscal years 2006*
13 *through 2012 to carry out this Act (other than section*
14 *8); and*

15 (2) *\$5,000,000 for each of such fiscal years to*
16 *carry out section 8, of which at least \$3,000,000 for*
17 *each fiscal year shall be used to carry out the pilot*
18 *projects authorized by section 8(b).*

Calendar No. 75

109TH CONGRESS
1ST Session

S. 50

[Report No. 109-59]

A BILL

To authorize and strengthen the National Oceanic and Atmospheric Administration's tsunami detection, forecast, warning, and mitigation program, and for other purposes.

APRIL 19, 2005

Reported with an amendment