

COMMITTEE AMENDMENT

[STAFF WORKING DRAFT]

March 8, 2005

Purpose: To add a coastal community vulnerability and adaptation program, and for other purposes.

**IN THE COMMITTEE ON COMMERCE, SCIENCE, AND
TRANSPORTATION—109TH Cong., 1ST Sess.**

S. 50, 109TH Congress, 1ST Session

MARCH 10, 2005

INTENDED to be proposed by Mr. INOUE (for himself, Mr. STEVENS, Mr. SMITH, AND MR. CANTWELL)

Viz: Strike out all after the enacting clause and insert the following:

1 **SECTION 1. SHORT TITLE.**

2 This Act may be cited as the “Tsunami Preparedness
3 Act”.

4 **SEC. 2. FINDINGS AND PURPOSES.**

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

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

11 (2) Tsunami have caused, and can cause in the
12 future, enormous loss of human life, injury, destruc-

1 tion of property, and economic and social disruption
2 in coastal and island communities.

3 (3) While 85 percent of tsunamis occur in the
4 Pacific Ocean, and coastal and island communities
5 in this region are the most vulnerable to the destruc-
6 tive results, tsunamis can occur at any point in any
7 ocean or related body of water where there are
8 earthquakes, volcanoes, or any other activity that
9 displaces a large volume of water.

10 (4) A number of States and territories are sub-
11 ject to the threat of tsunamis, including Alaska,
12 California, Hawaii, Oregon, Washington, American
13 Samoa, the Commonwealth of the Northern Mariana
14 Islands, Guam, Puerto Rico, and the U.S. Virgin Is-
15 lands.

16 (5) The National Oceanic and Atmospheric Ad-
17 ministration is responsible for maintaining a tsu-
18 nami detection and warning system for the Nation,
19 issuing warnings to United States communities at
20 risk from tsunamis, and preparing those communities
21 to respond appropriately, through—

22 (A) the Pacific Tsunami Warning Center
23 in Ewa Beach, Hawaii, which serves as a warn-
24 ing center for Hawaii, all other United States
25 assets in the Pacific, and Puerto Rico;

1 (B) the Alaska/West Coast Tsunami Warn-
2 ing Center in Palmer, Alaska, which is respon-
3 sible for issuing warnings for Alaska, British
4 Columbia, California, Oregon, and Washington;

5 (C) the Federal-State national tsunami
6 hazard mitigation program;

7 (D) a tsunami research and assessment
8 program, including programs conducted by the
9 Pacific Marine Environmental Laboratory;

10 (E) the TsunamiReady Program, which
11 educates and prepares communities for survival
12 before and during a tsunami;

13 (F) an archive of historical tsunami data,
14 held at the National Oceanic and Atmospheric
15 Administration's National Geophysical Data
16 Center; and

17 (G) other related programs, including
18 those operated in coordination with academic
19 institutions.

20 (6) The National Oceanic and Atmospheric Ad-
21 ministration also represents the United States as a
22 member of the International Coordination Group for
23 the Tsunami Warning System in the Pacific, admin-
24 istered by the Intergovernmental Oceanographic
25 Commission of UNESCO, for which the Pacific Tsu-

1 nami Warning Center acts as the operational center
2 and shares seismic and water level information with
3 26 member states, and maintains UNESCO's Inter-
4 national Tsunami Information Center, in Honolulu,
5 Hawaii, which provides technical and educational as-
6 sistance to member states.

7 (7) The Tsunami Warning Centers receive seis-
8 mographic information from the Global Seismic Net-
9 work, an international system of earthquake moni-
10 toring stations, from the United States Geological
11 Survey National Earthquake Information Center,
12 the Alaska Earthquake Information Center, and co-
13 operative regional seismic networks, and use these
14 data to issue tsunami warnings and integrate the in-
15 formation with data from their own tidal and deep
16 ocean monitoring stations, to cancel or verify the ex-
17 istence of a damaging tsunami. Warnings are dis-
18 seminated by the National Oceanic and Atmospheric
19 Administration to State emergency operation cen-
20 ters.

21 (8) Current gaps in the International Tsunami
22 Warning System, such as the lack of regional warn-
23 ing systems in the Indian Ocean, the southwest Pa-
24 cific Ocean, Central and South America, the Medi-

1 terranean Sea, and Caribbean, pose risks for coastal
2 and island communities.

3 (9) The tragic and extreme loss of life experi-
4 enced by countries in the Indian Ocean following the
5 magnitude 9.0 earthquake and resulting tsunami in
6 that region on December 26, 2004, illustrates the
7 destructive consequences which can occur in the ab-
8 sence of an effective tsunami warning and notifica-
9 tion system.

10 (10) An effective tsunami warning and notifica-
11 tion system is part of a multi-hazard disaster warn-
12 ing and preparedness program and requires real-
13 time seismic, sea level, and oceanographic data,
14 high-speed data analysis capabilities, a high-speed
15 tsunami warning communication system, a sustained
16 program of education and risk assessment to develop
17 response strategies, and an established local commu-
18 nications infrastructure for timely and effective dis-
19 semination of warnings to activate evacuation of tsu-
20 nami hazard zones.

21 (11) The Tsunami Warning System for the Pa-
22 cific is a model for other regions of the world to
23 adopt, and can be expanded and modernized to in-
24 crease detection, forecast, and warning capabilities
25 for vulnerable states and territories, reduce the inci-

1 dence of costly false alarms, improve reliability of
2 measurement and assessment technology, and in-
3 crease community preparedness.

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

16 (13) UNESCO has recognized the need to es-
17 tablish tsunami warning systems for regions beyond
18 the Pacific Basin that are vulnerable to tsunami, in-
19 cluding the Indian Ocean, and has convened a work-
20 ing group to lead an effort to expand the Inter-
21 national Tsunami Warning System in the Pacific to
22 such vulnerable regions.

23 (14) The international community and all vul-
24 nerable nations should take coordinated efforts to
25 establish and participate in regional tsunami warn-

1 ing systems and other hazard warnings systems de-
2 veloped to meet the goals of the United Nations
3 International Strategy for Disaster Reduction.

4 (15) On February 16, 2005, the United States,
5 together with 53 other Nations participating in the
6 Third Earth Observation Summit in Brussels, Bel-
7 gium, adopted a 10-year implementation plan as the
8 basis for establishing the Global Earth Observation
9 System of Systems.

10 (16) The Global Earth Observation System of
11 Systems will consist of existing and future earth ob-
12 servation systems, including the United States tsu-
13 nami detection and warning system.

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

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

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

1 (3) to increase and accelerate mapping, mod-
2 eling, research, assessment, education, and outreach
3 efforts in order to improve forecasting, prepared-
4 ness, mitigation, response, and recovery of tsunami
5 and related coastal hazards;

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

10 (5) to improve Federal, State, and international
11 coordination for tsunami and other coastal hazard
12 warnings and preparedness.

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

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

21 (b) **SYSTEM REQUIREMENTS.**—

22 (1) **PACIFIC SYSTEM.**—The Pacific tsunami
23 warning system shall cover the entire Pacific Ocean
24 area, including the Western Pacific, the Central Pa-

1 cific, the North Pacific, the South Pacific, and the
2 East Pacific and Arctic areas.

3 (2) ATLANTIC, CARIBBEAN, AND GULF OF MEX-
4 ICO SYSTEM.—The Atlantic, Caribbean, and Gulf
5 system shall cover areas of the Atlantic Ocean, Car-
6ibbean Sea, and the Gulf of Mexico that the Admin-
7istrator determines—

8 (A) to be geologically active, or to have sig-
9nificant potential for geological activity; and

10 (B) to pose measurable risks of tsunamis
11 for States along the coastal areas of the Atlan-
12tic Ocean or the Gulf of Mexico.

13 (3) COMPONENTS.—The systems shall—

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

16 (B) include an associated tide gauge and
17 water level system designed for long-term con-
18tinuous operation tsunami transmission capa-
19bility;

20 (C) allow for such additional sensors as
21 may be necessary to provide other ocean and
22 earth observation capabilities;

23 (D) provide for the establishment of a co-
24operative effort between the National Oceanic
25 and Atmospheric Administration and the

1 United States Geological Survey under which
2 the Geological Survey and State earthquake in-
3 formation centers provide rapid and reliable
4 real-time seismic information to the Adminis-
5 tration from international and domestic seismic
6 networks;

7 (E) provide for information and data proc-
8 essing through the tsunami warning centers es-
9 tablished under subsection (c);

10 (F) be integrated into United States and
11 global ocean and earth observing systems, in-
12 cluding the Global Earth Observation System of
13 Systems;

14 (G) provide a communications infrastruc-
15 ture, in coordination with local communications
16 providers, for at-risk tsunami communities that
17 supports rapid and reliable alert and notifica-
18 tion to the public, such as the National Oceanic
19 and Atmospheric Administration's Weather,
20 Alert, and Readiness Network, which includes
21 the weather radio and the All Hazard Alert
22 Broadcasting Radio; and

23 (H) the integration of NOAA's Advanced
24 Weather Interactive Processing System with
25 other communications technologies.

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

15 (c) TSUNAMI WARNING CENTERS.—

16 (1) IN GENERAL.—The Administrator shall es-
17 tablish tsunami warning centers to provide a link be-
18 tween the detection and warning system and the tsu-
19 nami hazard mitigation program established under
20 section 4 including—

21 (A) a Pacific Tsunami Warning Center in
22 Hawaii;

23 (B) a West Coast and Alaska Tsunami
24 Warning Center in Alaska; and

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

3 (2) RESPONSIBILITIES.—The responsibilities of
4 each tsunami warning center shall include—

5 (A) continuously monitoring data from
6 seismological stations, deep ocean detection
7 buoys, and tidal monitoring stations and pro-
8 viding such data to the national tsunami ar-
9 chive;

10 (B) evaluating earthquakes that have the
11 potential to generate tsunami;

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

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

21 (d) DATA MANAGEMENT.—The Administrator shall
22 maintain national and regionally-based data management
23 systems to support and establish data management re-
24 quirements for the tsunami detection and monitoring sys-
25 tem, including requirements for—

- 1 (1) quality control and quality assurance;
- 2 (2) archiving and maintaining data;
- 3 (3) supporting integration of observations from
- 4 the system with other national and international
- 5 water level measurements, such as the Global Sea
- 6 Level Monitoring System;
- 7 (4) integration of observations from the system
- 8 with other elements of the global and coastal compo-
- 9 nents of the integrated ocean and coastal observing
- 10 system and the Global Earth Observation System of
- 11 Systems; and
- 12 (5) the development of and access to data sets
- 13 and integrated data products designed to support
- 14 multi-hazard regional vulnerability assessment and
- 15 adaptation programs such as the program estab-
- 16 lished under section 8.

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

18 (a) IN GENERAL.—The Administrator of the Na-
19 tional Oceanic and Atmospheric Administration shall, in
20 coordination with other agencies and academic institu-
21 tions, develop and conduct a community-based tsunami
22 hazard mitigation program to improve tsunami prepared-
23 ness of at-risk areas.

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

4 (1) the National Oceanic and Atmospheric Ad-
5 ministration;

6 (2) the United States Geological Survey;

7 (3) the Federal Emergency Management Agen-
8 cy;

9 (4) the National Science Foundation;

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

12 (6) affected coastal States and territories.

13 (c) PROGRAM COMPONENTS.—The program shall—

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

17 (2) promote and improve community outreach
18 and education networks and programs to ensure
19 community awareness and readiness, including the
20 development of multi-hazard risk and vulnerability
21 assessment training and decision support tools, im-
22 plementation of technical training and public edu-
23 cation programs, and provide for certification of pre-
24 pared communities;

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
10 of guidelines, and other purposes;

11 (5) through the Federal Emergency Manage-
12 ment Agency as the lead agency, develop tsunami
13 specific rescue and recovery guidelines for the Na-
14 tional Response Plan, including long-term mitigation
15 measures, educational programs to discourage devel-
16 opment in high-risk areas, and use of remote sensing
17 and other technology in rescue and recovery oper-
18 ations;

19 (6) require budget coordination, through the
20 Administration, to carry out the purposes of this Act
21 and to ensure that participating agencies provide
22 necessary funds for matters within their respective
23 areas of authority and expertise; and

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

4 **SEC. 5. TSUNAMI RESEARCH PROGRAM.**

5 (a) ESTABLISHMENT.—The Administrator of the Na-
6 tional Oceanic and Atmospheric Administration shall, in
7 coordination with other agencies and academic institu-
8 tions, establish a tsunami research program to develop de-
9 tection, prediction, communication, and mitigation science
10 and technology that supports tsunami forecasts and warn-
11 ings, including advanced sensing techniques, information
12 and communication technology, data collection, analysis
13 and assessment for tsunami tracking and numerical fore-
14 cast modeling that will—

15 (1) help determine—

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

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

20 (2) develop techniques and technologies that
21 may be used to communicate tsunami forecasts and
22 warnings as quickly and effectively as possible to af-
23 fected communities;

24 (3) develop techniques and technologies to sup-
25 port evacuation products, including real-time notice

1 of the condition of critical infrastructure along tsu-
2 nami evacuation routes for public officials and first
3 responders; and

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

6 (b) COMMUNICATIONS TECHNOLOGY.—The Adminis-
7 trator, in consultation with in consultation with the Assist-
8 ant Secretary of Commerce for Communications and In-
9 formation and the Federal Communications Commission,
10 shall investigate the potential for improved communica-
11 tions systems for tsunami and other hazard warnings by
12 incorporating into the existing network a full range of op-
13 tions for providing those warnings to the public, including,
14 as appropriate—

15 (1) telephones, including special alert rings;

16 (2) wireless and satellite technology, including
17 cellular telephones and pagers;

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

19 (4) automatic alert televisions and radios;

20 (5) innovative and low-cost combinations of
21 such technologies that may provide access to remote
22 areas; and

23 (6) other technologies that may be developed.

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

2 (a) SYSTEM UPGRADES.—The Administrator of the
3 National Oceanic and Atmospheric Administration shall—

4 (1) authorize and direct the immediate repair of
5 existing deep ocean detection buoys and related com-
6 ponents of the system;

7 (2) ensure the deployment of an array of deep
8 ocean detection buoys capable of carrying multi-ob-
9 servation technology in the regions described in sec-
10 tion 3(a) of this Act;

11 (3) ensure expansion or upgrade of the seismic
12 monitoring and tide gauge networks in the regions
13 described in section 3(a); and

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

16 (b) TRANSFER OF TECHNOLOGY; MAINTENANCE AND
17 UPGRADES.—In carrying out this section, the Adminis-
18 trator shall—

19 (1) promulgate specifications and standards for
20 forecast, detection, and warning systems, including
21 detection equipment;

22 (2) develop and execute a plan for the transfer
23 of technology from ongoing research to long-term
24 operations;

25 (3) ensure that detection equipment is main-
26 tained in operational condition to fulfill the fore-

1 casting, detection and warning requirements of the
2 regional tsunami detection and warning systems;

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

9 (5) ensure integration of the tsunami detection
10 system with other United States and global ocean
11 and coastal observation systems, the Global Earth
12 Observation System of Systems, global seismic net-
13 works, and the Advanced National Seismic System.

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

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

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

8 (3) the Administrator does not reasonably fore-
9 see unanticipated delays in the deployment and oper-
10 ational schedule specified in the contract.

11 (d) CONGRESSIONAL NOTIFICATIONS.—The Adminis-
12 trator shall notify the Senate Committee on Commerce,
13 Science, and Transportation, the House of Representa-
14 tives Committee on Science, and the House of Representa-
15 tives Committee on Resources of—

16 (1) impaired regional detection coverage due to
17 equipment or system failures; and

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

21 (e) ANNUAL REPORT.—The Administrator shall
22 transmit an annual report to the Senate Committee on
23 Commerce, Science, and Transportation and the House of
24 Representatives Committee on Science the status of the
25 tsunami detection and warning system, including accu-

1 racy, false alarms, equipment failures, improvements over
2 the previous year, and goals for further improvement (or
3 plans for curing failures) of the system, as well as progress
4 and accomplishments of the national tsunami hazard miti-
5 gation program.

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

18 **SEC. 7. GLOBAL TSUNAMI WARNING AND MITIGATION NET-**
19 **WORK.**

20 (a) **INTERNATIONAL TSUNAMI WARNING SYSTEM.**—
21 The Administrator of the National Oceanic and Atmos-
22 pheric Administration, in coordination with other mem-
23 bers of the United States Interagency Committee of the
24 National Tsunami Mitigation Program, shall provide tech-
25 nical assistance and advice to the Intergovernmental

1 Oceanographic Commission of UNESCO, the World Mete-
2 orological Organization, the Group on Earth Observations,
3 and other international entities, as part of international
4 efforts to develop a fully functional global tsunami warn-
5 ing system comprised of regional tsunami warning net-
6 works, modeled on the International Tsunami Warning
7 System of the Pacific, and consistent with the 10-year im-
8 plementation plan for the Global Earth Observation Sys-
9 tem of Systems.

10 (b) INTERNATIONAL TSUNAMI INFORMATION CEN-
11 TER.—The Administrator shall operate an International
12 Tsunami Information Center to improve tsunami pre-
13 paredness for all Pacific Ocean nations participating in
14 the International Tsunami Warning System of the Pacific,
15 and which may also provide such assistance to other na-
16 tions participating in a global tsunami warning system es-
17 tablished through the International Oceanographic Com-
18 mittee of UNESCO. As part of its responsibilities in the
19 Pacific, the Center shall—

20 (1) monitor international tsunami warning ac-
21 tivities in the Pacific;

22 (2) assist member states in establishing na-
23 tional warning systems, and make information avail-
24 able on current technologies for tsunami warning
25 systems;

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

4 (4) disseminate information, including edu-
5 cational materials and research reports.

6 (c) TECHNICAL ASSISTANCE.—In carrying out this
7 section, the Administrator—

8 (1) shall give priority to assisting nations in
9 identifying vulnerable coastal areas, creating inunda-
10 tion maps, obtaining or designing real-time detection
11 and reporting equipment, and establishing commu-
12 nication and warning networks and contact points in
13 each vulnerable nation;

14 (2) may establish a process for transfer of de-
15 tection and communication technology to affected
16 nations for the purposes of establishing the inter-
17 national tsunami warning system; and

18 (3) shall provide technical and other assistance
19 to support international tsunami education, re-
20 sponse, vulnerability, and adaptation programs.

21 (d) DATA-SHARING REQUIREMENT.—The Adminis-
22 trator may not provide assistance under this section for
23 any region unless all affected nations in that region par-
24 ticipating in the tsunami warning network agree to share

1 relevant data associated with the development and oper-
2 ation of the network.

3 (e) FUNDING ASSISTANCE.—The Administrator, in
4 coordination with the Secretary of State, shall seek fund-
5 ing assistance from participating nations needed to ensure
6 establishment of a fully functional global tsunami warning
7 system.

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

18 **SEC. 8. COASTAL COMMUNITY VULNERABILITY AND ADAP-**
19 **TATION PROGRAM.**

20 (a) ESTABLISHMENT.—The Administrator of the Na-
21 tional Oceanic and Atmospheric Administration shall es-
22 tablish an integrated coastal vulnerability and adaptation
23 program focused on improving the resilience of coastal
24 communities to natural hazards and disasters. The pro-
25 gram shall be regional in nature, build upon and integrate

1 existing Federal and State programs, and provide usable
2 products that will improve preparedness of communities,
3 businesses, and government entities. The program may in-
4 clude the following activities:

5 (1) Development of multi-hazard vulnerability
6 maps to characterize and assess risks of coastal
7 communities to a range of natural hazards and pro-
8 vide a baseline for assessing future risks.

9 (2) Multi-disciplinary vulnerability assessment
10 research and education that will help integrate risk
11 management with community development planning
12 and policies.

13 (3) Risk management and leadership training
14 for the public, local officials, and institutions that
15 will enhance understanding and preparedness.

16 (4) Risk assessment technology development,
17 including research and development of emerging
18 technologies and practical application of existing or
19 emerging technologies, such as modeling, remote
20 sensing, geospatial technology, engineering, and ob-
21 serving systems.

22 (5) Risk management data and information
23 services, including access to data and products de-
24 rived from observing and detection systems, as well
25 as development and maintenance of new integrated

1 data products that would support risk assessment
2 and risk management programs.

3 (6) Risk communication systems that coordi-
4 nate with and build upon existing alert, warning,
5 and forecast systems and actively engage policy offi-
6 cials, government agencies, businesses, communities,
7 non-governmental organizations, and the media in
8 the design and implementation of the system.

9 (b) REGIONAL PILOT PROJECTS.—

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

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

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

6 (B) the physical impacts such as coastal
7 erosion, flooding and loss of estuarine habitat,
8 saltwater intrusion of aquifers and saltwater
9 eneroachment, and species migration;

10 (C) the economic impact on local, State,
11 tribal, and regional economies, including the im-
12 pact on coastal infrastructure and the abun-
13 dance or distribution of economically important
14 living marine resources; and

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

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

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

1 (2) Dependence on economic sectors and nat-
2 ural resources that are particularly sensitive to
3 coastal hazards.

4 (3) Opportunities to link and leverage related
5 regional risk observation, research, forecasting, as-
6 sessment, educational and risk management pro-
7 grams.

8 (4) Demonstration of strong, interagency col-
9 laboration in the area of risk management.

10 (5) Access to NOAA and other Federal agency
11 programs, facilities, and infrastructure related to
12 tsunami and other coastal hazards monitoring,
13 warning, forecasting, research assessment, and data
14 management.

15 (d) REGIONAL ADAPTATION PLANS.—The Adminis-
16 trator shall, within 3 years after the commencement of
17 each project under subsection (b), submit to the Congress
18 regional adaptation plans—

19 (1) based on the information contained in the
20 regional assessments conducted under subsection
21 (b);

22 (2) developed with the participation of other
23 Federal agencies, State, tribal, and local government
24 agencies, and non-governmental entities (including
25 academia and the private sector) that will be critical

1 in the implementation of the plan at the State, trib-
2 al, and local levels;

3 (3) that recommend targets and strategies to
4 address coastal impacts associated with tsunami, cli-
5 mate change, sea level rise, or climate variability;

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

8 (5) that include recommendations on—

9 (A) Federal flood insurance program modi-
10 fications;

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

13 (C) enhancing the effectiveness of State
14 coastal zone management programs in miti-
15 gating or preventing coastal risks;

16 (D) mitigation incentives such as rolling
17 easements, strategic retreat, State or Federal
18 acquisition in fee simple or other interest in
19 land, construction standards, and zoning;

20 (E) land and property owner education;

21 (F) economic planning for small commu-
22 nities dependent upon affected coastal re-
23 sources, including fisheries; and

24 (G) funding requirements and mechanisms.

1 (e) TECHNICAL PLANNING AND FINANCIAL ASSIST-
2 ANCE.—The Administrator, through the National Ocean
3 Service, shall establish a coordinated program—

4 (1) to provide technical planning assistance and
5 financial assistance to coastal States, tribes, and
6 local governments as they develop and implement
7 adaptation or mitigation strategies and plans under
8 this section; and

9 (2) to make products, information, tools, and
10 technical expertise generated from the development
11 of the regional assessment and the regional adapta-
12 tion plan available to coastal States for the purposes
13 of developing their own State, tribal, and local plans.

14 **SEC. 9. AUTHORIZATION OF APPROPRIATIONS.**

15 There are authorized to be appropriated to the Ad-
16 ministrator of the National Oceanic and Atmospheric Ad-
17 ministration—

18 (1) \$35,000,000 for each of fiscal years 2006
19 through 2012 to carry out this Act (other than sec-
20 tion 8); and

21 (2) \$5,000,000 for each of such fiscal years to
22 carry out section 8, of which at least \$3,000,000 for
23 each fiscal year shall be used to carry out the pilot
24 projects authorized by section 8(b).

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