

Union Calendar No. 422

109TH CONGRESS
2^D SESSION

H. R. 1674

[Report No. 109-698]

To authorize and strengthen the tsunami detection, forecast, warning, and mitigation program of the National Oceanic and Atmospheric Administration, to be carried out by the National Weather Service, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

APRIL 18, 2005

Mr. BOEHLERT (for himself, Mr. INSLEE, Mr. EHLERS, and Mr. WU) introduced the following bill; which was referred to the Committee on Science

SEPTEMBER 28, 2006

Additional sponsors: Mr. GILCHREST, Mr. BAIRD, Mr. CASE, Ms. BORDALLO, Mr. McDERMOTT, Mr. GRIJALVA, Mr. SAXTON, Mr. PALLONE, Ms. JACKSON-LEE of Texas, Mr. COSTA, Mr. MENENDEZ, Mr. MILLER of North Carolina, Mr. GORDON, Ms. HOOLEY, Mr. MEEKS of New York, Mr. HONDA, Mr. FITZPATRICK of Pennsylvania, Mr. BONNER, Mr. SCHWARZ of Michigan, Mr. SHAYS, Mr. REICHERT, and Mr. FARR

SEPTEMBER 28, 2006

Reported with an amendment, committed to the Committee of the Whole House on the State of the Union, and ordered to be printed

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

[For text of introduced bill, see copy of bill as introduced on April 18, 2005]

A BILL

To authorize and strengthen the tsunami detection, forecast, warning, and mitigation program of the National Oceanic

and Atmospheric Administration, to be carried out by the National Weather Service, 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 “United States Tsunami*
5 *Warning and Education Act”.*

6 **SEC. 2. PURPOSES.**

7 *The purposes of this Act are—*

8 (1) *to improve tsunami detection, forecasting,*
9 *warnings, notification, preparedness, and mitigation*
10 *to protect life and property both in the United States;*

11 (2) *to enhance and modernize the existing Pa-*
12 *cific Tsunami Warning System to increase coverage,*
13 *reduce false alarms and increase the accuracy of fore-*
14 *casts and warnings, and to expand detection and*
15 *warning systems to include other vulnerable States*
16 *and United States territories, including the Atlantic*
17 *Ocean, Caribbean Sea, and Gulf of Mexico areas;*

18 (3) *to improve mapping, modeling, research, and*
19 *assessment efforts to improve tsunami forecasting,*
20 *preparedness, mitigation, response, and recovery;*

21 (4) *to improve and increase education and out-*
22 *reach activities and ensure that those receiving tsu-*
23 *unami warnings and the at-risk public know what to*
24 *do when a tsunami is approaching;*

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

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

8 **SEC. 3. TSUNAMI FORECASTING AND WARNING PROGRAM.**

9 (a) *IN GENERAL.*—The Administrator of the National
10 Oceanic and Atmospheric Administration, through the Na-
11 tional Weather Service, shall operate a program to provide
12 tsunami forecasting and warnings for the Pacific Ocean re-
13 gion and for the Atlantic Ocean, Caribbean Sea, and Gulf
14 of Mexico region.

15 (b) *COMPONENTS.*—The program under this section
16 shall—

17 (1) include the tsunami warning centers estab-
18 lished under subsection (d);

19 (2) provide tsunami forecasting capability based
20 on models and measurements, including tsunami in-
21 undation models and maps for use in increasing the
22 preparedness of communities, including through the
23 TsunamiReady program;

24 (3) include a cooperative effort among the Na-
25 tional Oceanic and Atmospheric Administration, the

1 *United States Geological Survey, and the National*
2 *Science Foundation under which the Geological Sur-*
3 *vey and the National Science Foundation shall pro-*
4 *vide rapid and reliable seismic information to the*
5 *National Oceanic and Atmospheric Administration*
6 *from international and domestic seismic networks;*

7 *(4) provide a capability for the dissemination of*
8 *warnings to at-risk States and tsunami communities*
9 *through rapid and reliable notification to government*
10 *officials and the public through such means as the*
11 *National Oceanic and Atmospheric Administration*
12 *weather radio and the All Hazard Alert Broadcasting*
13 *Radio; and*

14 *(5) include any technology the Administrator*
15 *considers appropriate to fulfill the objectives of the*
16 *program under this section.*

17 *(c) SYSTEM AREAS.—The program under this section*
18 *shall operate—*

19 *(1) a Pacific tsunami warning system capable of*
20 *forecasting tsunamis anywhere in the Pacific Ocean*
21 *region and providing adequate warnings; and*

22 *(2) an Atlantic Ocean, Caribbean Sea, and Gulf*
23 *of Mexico tsunami warning system capable of fore-*
24 *casting tsunamis and providing adequate warnings*

1 *in areas of the Atlantic Ocean, Caribbean Sea, and*
2 *Gulf of Mexico that are determined—*

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

5 *(B) to pose significant risks of tsunamis for*
6 *States along the coastal areas of the Atlantic*
7 *Ocean, Caribbean Sea, or Gulf of Mexico.*

8 *(d) TSUNAMI WARNING CENTERS.—*

9 *(1) IN GENERAL.—The Administrator, through*
10 *the National Weather Service, shall maintain or es-*
11 *tablish—*

12 *(A) a Pacific Tsunami Warning Center in*
13 *Hawaii;*

14 *(B) a West Coast and Alaska Tsunami*
15 *Warning Center in Alaska; and*

16 *(C) any additional forecast and warning*
17 *centers determined by the National Weather*
18 *Service to be necessary.*

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

21 *(A) continuously monitoring data from seis-*
22 *mological, deep ocean, and tidal monitoring sta-*
23 *tions;*

24 *(B) evaluating earthquakes that have the*
25 *potential to generate tsunamis;*

1 (C) evaluating deep ocean buoy data and
2 tidal monitoring stations for indications of tsu-
3 nami resulting from earthquakes and other
4 sources;

5 (D) disseminating forecasts and tsunami
6 warning bulletins to Federal, State, and local
7 government officials and the public;

8 (E) coordinating with the tsunami hazard
9 mitigation program described in section 4 to en-
10 sure ongoing sharing of information between
11 forecasters and emergency management officials;
12 and

13 (F) making data gathered under this Act
14 and post-warning analyses conducted by the Na-
15 tional Weather Service available to researchers.

16 (e) *TRANSFER OF TECHNOLOGY; MAINTENANCE AND*
17 *UPGRADES.*—

18 (1) *IN GENERAL.*—*In carrying out this section,*
19 *the National Weather Service shall—*

20 (A) develop requirements for the equipment
21 used to forecast tsunamis, which shall include
22 provisions for multipurpose detection platforms,
23 reliability and performance metrics, and to the
24 maximum extent practicable how the equipment
25 will be integrated with other United States and

1 *global ocean and coastal observation systems, the*
2 *global earth observing system of systems, global*
3 *seismic networks, and the Advanced National*
4 *Seismic System; and*

5 *(B) develop and execute a plan for the*
6 *transfer of technology from ongoing research de-*
7 *scribed in section 5 into the program under this*
8 *section.*

9 *(2) REPORT TO CONGRESS.—(A) Not later than*
10 *1 year after the date of enactment of this Act, the Na-*
11 *tional Weather Service shall transmit to Congress a*
12 *report on how the tsunami forecast system under this*
13 *section will be integrated with other United States*
14 *and global ocean and coastal observation systems, the*
15 *global earth observing system of systems, global seis-*
16 *mic networks, and the Advanced National Seismic*
17 *System.*

18 *(B) Not later than 3 years after the date of en-*
19 *actment to this Act, the National Weather Service*
20 *shall transmit a report to Congress on how technology*
21 *developed under section 5 is being transferred into the*
22 *program under this section.*

23 *(f) CONGRESSIONAL NOTIFICATIONS.—The Adminis-*
24 *trator shall notify the Senate Committee on Commerce,*

1 *Science, and Transportation and the House of Representa-*
2 *tives Committee on Science within 3 months of—*

3 (1) *impaired regional forecasting capabilities*
4 *due to equipment or system failures; and*

5 (2) *significant contractor failures or delays in*
6 *completing work associated with the tsunami fore-*
7 *casting and warning system.*

8 (g) *EXTERNAL REVIEW.—The Administrator of the*
9 *National Oceanic and Atmospheric Administration shall*
10 *enter into an arrangement with the National Academy of*
11 *Sciences to review the tsunami detection, forecast, and*
12 *warning program operated by the National Weather Service*
13 *under this Act to assess further modernization and coverage*
14 *needs, as well as long-term operational reliability issues,*
15 *taking into account measures implemented under this Act.*
16 *The review shall also include an assessment of how well the*
17 *forecast equipment has been integrated into other United*
18 *States and global ocean and coastal observation systems*
19 *and the global earth observing system of systems. Not later*
20 *than 2 years after the date of enactment of this Act, the*
21 *Administrator shall transmit a report containing the Na-*
22 *tional Academy of Sciences' recommendations, the Adminis-*
23 *trator's responses to the recommendations, including those*
24 *where the Administrator disagrees with the Academy, a*
25 *timetable to implement the accepted recommendations, and*

1 *the cost of implementing all the Academy's recommenda-*
2 *tions, to the Senate Committee on Commerce, Science, and*
3 *Transportation and the House of Representatives Com-*
4 *mittee on Science.*

5 **SEC. 4. NATIONAL TSUNAMI HAZARD MITIGATION PRO-**
6 **GRAM.**

7 (a) *IN GENERAL.*—*The Administrator of the National*
8 *Oceanic and Atmospheric Administration, through the Na-*
9 *tional Weather Service, shall conduct a community-based*
10 *tsunami hazard mitigation program to improve tsunami*
11 *preparedness of at-risk areas in the United States and its*
12 *territories.*

13 (b) *COORDINATING COMMITTEE.*—*In conducting the*
14 *program under this section, the Administrator shall estab-*
15 *lish a coordinating committee comprising representatives of*
16 *Federal, State, local, and tribal government officials. The*
17 *Administrator may establish subcommittees to address re-*
18 *gion-specific issues. The committee shall—*

19 (1) *recommend how funds appropriated for car-*
20 *rying out the program under this section will be allo-*
21 *cated;*

22 (2) *ensure that areas described in section 3(c) in*
23 *the United States and its territories can have the op-*
24 *portunity to participate in the program; and*

1 (3) *provide recommendations to the National*
2 *Weather Service on how to improve the*
3 *TsunamiReady program, particularly on ways to*
4 *make communities more tsunami resilient through the*
5 *use of inundation maps and other mitigation prac-*
6 *tices.*

7 (c) *PROGRAM COMPONENTS.—The program under this*
8 *section shall—*

9 (1) *use inundation models that meet a standard*
10 *of accuracy defined by the National Oceanic and At-*
11 *mospheric Administration to improve the quality and*
12 *extent of inundation mapping, including assessment*
13 *of vulnerable inner coastal and nearshore areas, in a*
14 *coordinated and standardized fashion to maximize re-*
15 *sources and the utility of data collected;*

16 (2) *promote and improve community outreach*
17 *and education networks and programs to ensure com-*
18 *munity readiness, including the development of multi-*
19 *hazard risk and vulnerability assessment training*
20 *and decision support tools, implementation of tech-*
21 *nical training and public education programs, and*
22 *provide for certification of prepared communities;*

23 (3) *integrate tsunami preparedness and mitiga-*
24 *tion programs into ongoing hazard warning and risk*
25 *management programs in affected areas;*

1 (4) *promote the adoption of tsunami warning*
2 *and mitigation measures by Federal, State, tribal,*
3 *and local governments and nongovernmental entities,*
4 *including educational programs to discourage devel-*
5 *opment in high-risk areas; and*

6 (5) *provide for periodic external review of the*
7 *program.*

8 **SEC. 5. TSUNAMI RESEARCH PROGRAM.**

9 *The Administrator of the National Oceanic and At-*
10 *mospheric Administration shall, in consultation with other*
11 *agencies and academic institutions, and with the Coordi-*
12 *nating Committee established under section 4(b), establish*
13 *or maintain a tsunami research program to develop detec-*
14 *tion, forecast, communication, and mitigation science and*
15 *technology, including advanced sensing techniques, infor-*
16 *mation and communication technology, data collection,*
17 *analysis, and assessment for tsunami tracking and numer-*
18 *ical forecast modeling. Such research program shall—*

19 (1) *consider other appropriate research to miti-*
20 *gate the impact of tsunamis;*

21 (2) *coordinate with the National Weather Service*
22 *on technology to be transferred to operations;*

23 (3) *include social science research to develop and*
24 *assess community warning, education, and evacu-*
25 *ation materials; and*

1 (4) *ensure that research and findings are avail-*
2 *able to the scientific community.*

3 **SEC. 6. GLOBAL TSUNAMI WARNING AND MITIGATION NET-**
4 **WORK.**

5 (a) *INTERNATIONAL TSUNAMI WARNING SYSTEM.—*
6 *The Administrator of the National Oceanic and Atmos-*
7 *pheric Administration, through the National Weather Serv-*
8 *ice, in coordination with other members of the United*
9 *States Interagency Committee of the National Tsunami*
10 *Hazard Mitigation Program, shall provide technical assist-*
11 *ance and training to the Intergovernmental Oceanographic*
12 *Commission, the World Meteorological Organization, and*
13 *other international entities, as part of international efforts*
14 *to develop a fully functional global tsunami forecast and*
15 *warning system comprising regional tsunami warning net-*
16 *works, modeled on the International Tsunami Warning*
17 *System of the Pacific.*

18 (b) *INTERNATIONAL TSUNAMI INFORMATION CEN-*
19 *TER.—The Administrator of the National Oceanic and At-*
20 *mospheric Administration, through the National Weather*
21 *Service, in cooperation with the Intergovernmental Oceano-*
22 *graphic Commission, shall operate an International Tsu-*
23 *nami Information Center to improve tsunami preparedness*
24 *for all Pacific Ocean nations participating in the Inter-*
25 *national Tsunami Warning System of the Pacific, and*

1 *which may also provide such assistance to other nations*
2 *participating in a global tsunami warning system estab-*
3 *lished through the Intergovernmental Oceanographic Com-*
4 *mission. As part of its responsibilities around the world,*
5 *the Center shall—*

6 (1) *monitor international tsunami warning ac-*
7 *tivities around the world;*

8 (2) *assist member states in establishing national*
9 *warning systems, and make information available on*
10 *current technologies for tsunami warning systems;*

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

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

16 (c) *DETECTION EQUIPMENT; TECHNICAL ADVICE AND*
17 *TRAINING.—In carrying out this section, the National*
18 *Weather Service—*

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

1 (2) *may establish a process for transfer of detec-*
2 *tion and communication technology to affected na-*
3 *tions for the purposes of establishing the international*
4 *tsunami warning system.*

5 (d) *DATA-SHARING REQUIREMENT.—The National*
6 *Weather Service, when deciding to provide assistance under*
7 *this section, may take into consideration the data sharing*
8 *policies and practices of nations proposed to receive such*
9 *assistance, with a goal to encourage all nations to support*
10 *full and open exchange of data.*

11 **SEC. 7. AUTHORIZATION OF APPROPRIATIONS.**

12 *There are authorized to be appropriated to the Admin-*
13 *istrator of the National Oceanic and Atmospheric Adminis-*
14 *tration to carry out this Act—*

15 (1) *\$26,000,000 for fiscal year 2006, of which—*

16 (A) *62 percent shall be for the tsunami fore-*
17 *cast and warning systems under section 3 and*
18 *international activities under section 6;*

19 (B) *30 percent shall be for the tsunami haz-*
20 *ard mitigation program under section 4; and*

21 (C) *8 percent shall be for the tsunami re-*
22 *search program under section 5;*

23 (2) *\$30,000,000 for fiscal year 2007, of which—*

1 (A) 66 percent shall be for the tsunami fore-
2 cast and warning systems under section 3 and
3 international activities under section 6;

4 (B) 26 percent shall be for the tsunami haz-
5 ard mitigation program under section 4; and

6 (C) 8 percent shall be for the tsunami re-
7 search program under section 5; and

8 (3) \$30,000,000 for fiscal year 2008, of which—

9 (A) 66 percent shall be for the tsunami fore-
10 cast and warning systems under section 3 and
11 international activities under section 6;

12 (B) 26 percent shall be for the tsunami haz-
13 ard mitigation program under section 4; and

14 (C) 8 percent shall be for the tsunami re-
15 search program under section 5.

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