

109<sup>TH</sup> CONGRESS  
1<sup>ST</sup> SESSION

# H. R. 1674

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.

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## 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

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## 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—

1           (1) to improve tsunami detection, forecasting,  
2 warnings, notification, preparedness, and mitigation  
3 to protect life and property both in the United  
4 States and elsewhere in the world;

5           (2) to enhance and modernize the existing Pa-  
6 cific Tsunami Warning System to increase coverage,  
7 reduce false alarms and increase the accuracy of  
8 forecasts and warnings, and to expand detection and  
9 warning systems to include other vulnerable States  
10 and United States territories, including the Atlantic  
11 Ocean, Caribbean Sea, and Gulf of Mexico areas;

12          (3) to improve mapping, modeling, research,  
13 and assessment efforts to improve tsunami fore-  
14 casting, preparedness, mitigation, response, and re-  
15 covery;

16          (4) to improve and increase education and out-  
17 reach activities and ensure that those receiving tsu-  
18 nami warnings and the at-risk public know what to  
19 do when a tsunami is approaching;

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

1           (6) to improve Federal, State, and international  
2           coordination for tsunami and other coastal hazard  
3           warnings and preparedness.

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

5           (a) IN GENERAL.—The Administrator of the Na-  
6           tional Oceanic and Atmospheric Administration, through  
7           the National Weather Service, shall operate a program to  
8           provide tsunami forecasting and warnings for the Pacific  
9           Ocean region and for the Atlantic Ocean, Caribbean Sea,  
10          and Gulf of Mexico region.

11          (b) COMPONENTS.—The program under this section  
12          shall—

13               (1) include the tsunami warning centers estab-  
14               lished under subsection (d);

15               (2) provide tsunami forecasting capability based  
16               on models and measurements, including tsunami in-  
17               undation models and maps for use in increasing the  
18               preparedness of communities, including through the  
19               TsunamiReady program;

20               (3) include a cooperative effort among the Na-  
21               tional Oceanic and Atmospheric Administration, the  
22               United States Geological Survey, and the National  
23               Science Foundation under which the Geological Sur-  
24               vey and the National Science Foundation shall pro-  
25               vide rapid and reliable seismic information to the

1 National Oceanic and Atmospheric Administration  
2 from international and domestic seismic networks;

3 (4) provide a capability for the dissemination of  
4 warnings to at-risk States and tsunami communities  
5 through rapid and reliable notification to govern-  
6 ment officials and the public through such means as  
7 the National Oceanic and Atmospheric Administra-  
8 tion weather radio and the All Hazard Alert Broad-  
9 casting Radio; and

10 (5) include any technology the Administrator  
11 considers appropriate to fulfill the objectives of the  
12 program under this section.

13 (c) SYSTEM AREAS.—The program under this section  
14 shall operate—

15 (1) a Pacific tsunami warning system capable  
16 of forecasting tsunamis anywhere in the Pacific  
17 Ocean region and providing adequate warnings; and

18 (2) an Atlantic Ocean, Caribbean Sea, and Gulf  
19 of Mexico tsunami warning system capable of fore-  
20 casting tsunamis and providing adequate warnings  
21 in areas of the Atlantic Ocean, Caribbean Sea, and  
22 Gulf of Mexico that the National Weather Service  
23 determines—

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

1 (B) to pose significant risks of tsunamis  
2 for States along the coastal areas of the Atlan-  
3 tic Ocean, Caribbean Sea, or Gulf of Mexico.

4 (d) TSUNAMI WARNING CENTERS.—

5 (1) IN GENERAL.—The Administrator, through  
6 the National Weather Service, shall maintain or es-  
7 tablish—

8 (A) a Pacific Tsunami Warning Center in  
9 Hawaii;

10 (B) a West Coast and Alaska Tsunami  
11 Warning Center in Alaska; and

12 (C) any additional forecast and warning  
13 centers determined by the National Weather  
14 Service to be necessary.

15 (2) RESPONSIBILITIES.—The responsibilities of  
16 each tsunami warning center shall include—

17 (A) continuously monitoring data from  
18 seismological, deep ocean, and tidal monitoring  
19 stations;

20 (B) evaluating earthquakes that have the  
21 potential to generate tsunamis;

22 (C) evaluating deep ocean buoy data and  
23 tidal monitoring stations for indications of tsu-  
24 nami resulting from earthquakes and other  
25 sources;

1           (D) disseminating forecasts and tsunami  
2 warning bulletins to Federal, State, and local  
3 government officials and the public;

4           (E) coordinating with the tsunami hazard  
5 mitigation program described in section 4 to en-  
6 sure ongoing sharing of information between  
7 forecasters and emergency management offi-  
8 cials; and

9           (F) making data gathered under this Act  
10 and post-warning analyses conducted by the  
11 National Weather Service available to research-  
12 ers.

13       (e) TRANSFER OF TECHNOLOGY; MAINTENANCE AND  
14 UPGRADES.—

15           (1) IN GENERAL.—In carrying out this section,  
16 the National Weather Service shall—

17           (A) develop requirements for the equip-  
18 ment used to forecast tsunamis, which shall in-  
19 clude provisions for multipurpose detection plat-  
20 forms, reliability and performance metrics, and  
21 to the maximum extent practicable how the  
22 equipment will be integrated with other United  
23 States and global ocean and coastal observation  
24 systems, the global earth observing system of

1 systems, global seismic networks, and the Ad-  
2 vanced National Seismic System; and

3 (B) develop and execute a plan for the  
4 transfer of technology from ongoing research  
5 described in section 5 into the program under  
6 this section.

7 (2) REPORT TO CONGRESS.—(A) Not later than  
8 1 year after the date of enactment of this Act, the  
9 National Weather Service shall transmit to Congress  
10 a report on how the tsunami forecast system under  
11 this section will be integrated with other United  
12 States and global ocean and coastal observation sys-  
13 tems, the global earth observing system of systems,  
14 global seismic networks, and the Advanced National  
15 Seismic System.

16 (B) Not later than 3 years after the date of en-  
17 actment to this Act, the National Weather Service  
18 shall transmit a report to Congress on how tech-  
19 nology developed under section 5 is being trans-  
20 ferred into the program under this section.

21 (f) CONGRESSIONAL NOTIFICATIONS.—The Adminis-  
22 trator shall notify the Senate Committee on Commerce,  
23 Science, and Transportation and the House of Represent-  
24 atives Committee on Science within 3 months of—

1           (1) impaired regional forecasting capabilities  
2           due to equipment or system failures; and

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

6           (g) EXTERNAL REVIEW.—The Administrator of the  
7 National Oceanic and Atmospheric Administration shall  
8 enter into an arrangement with the National Academy of  
9 Sciences to review the tsunami detection, forecast, and  
10 warning program operated by the National Weather Serv-  
11 ice under this Act to assess further modernization and cov-  
12 erage needs, as well as long-term operational reliability  
13 issues, taking into account measures implemented under  
14 this Act. The review shall also include an assessment of  
15 how well the forecast equipment has been integrated into  
16 other United States and global ocean and coastal observa-  
17 tion systems and the global earth observing system of sys-  
18 tems. Not later than 2 years after the date of enactment  
19 of this Act, the Administrator shall transmit a report con-  
20 taining the National Academy of Sciences' recommenda-  
21 tions, the Administrator's responses to the recommenda-  
22 tions, including those where the Administrator disagrees  
23 with the Academy, a timetable to implement the accepted  
24 recommendations, and the cost of implementing all the  
25 Academy's recommendations, to the Senate Committee on



1 Commerce, Science, and Transportation and the House of  
2 Representatives Committee on Science.

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

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

10 (b) COORDINATING COMMITTEE.—In conducting the  
11 program under this section, the Administrator shall estab-  
12 lish a coordinating committee comprising representatives  
13 of Federal, State, local, and tribal government officials.  
14 The committee shall—

15 (1) recommend how funds appropriated for car-  
16 rying out the program under this section will be allo-  
17 cated;

18 (2) ensure that areas described in section 3(c)  
19 in the United States and its territories can have the  
20 opportunity to participate in the program; and

21 (3) provide recommendations to the National  
22 Weather Service on how to improve the  
23 TsunamiReady program, particularly on ways to  
24 make communities more tsunami resilient through

1 the use of inundation maps and other mitigation  
2 practices.

3 (c) PROGRAM COMPONENTS.—The program under  
4 this section shall—

5 (1) use National Oceanic and Atmospheric Ad-  
6 ministration inundation models to improve the qual-  
7 ity and extent of inundation mapping, including as-  
8 sessment of vulnerable inner coastal areas;

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

17 (3) integrate tsunami preparedness and mitiga-  
18 tion programs into ongoing hazard warning and risk  
19 management programs in affected areas;

20 (4) promote the adoption of tsunami warning  
21 and mitigation measures by Federal, State, tribal,  
22 and local governments and nongovernmental entities,  
23 including educational programs to discourage devel-  
24 opment in high-risk areas; and

1           (5) provide for periodic external review of the  
2           program.

3 **SEC. 5. TSUNAMI RESEARCH PROGRAM.**

4           The Administrator of the National Oceanic and At-  
5           mospheric Administration shall, in consultation with other  
6           agencies and academic institutions, establish or maintain  
7           a tsunami research program to develop detection, forecast,  
8           communication, and mitigation science and technology, in-  
9           cluding advanced sensing techniques, information and  
10          communication technology, data collection, analysis, and  
11          assessment for tsunami tracking and numerical forecast  
12          modeling. Such research program shall—

13           (1) consider other appropriate research to miti-  
14          gate the impact of tsunamis;

15           (2) coordinate with the National Weather Serv-  
16          ice on technology to be transferred to operations;  
17          and

18           (3) ensure that research and findings are avail-  
19          able to the scientific community.

20 **SEC. 6. GLOBAL TSUNAMI WARNING AND MITIGATION NET-**  
21 **WORK.**

22          (a) INTERNATIONAL TSUNAMI WARNING SYSTEM.—  
23          The Administrator of the National Oceanic and Atmos-  
24          pheric Administration, through the National Weather  
25          Service, in coordination with other members of the United

1 States Interagency Committee of the National Tsunami  
2 Mitigation Program, shall provide technical assistance and  
3 training to the Intergovernmental Oceanographic Commis-  
4 sion, the World Meteorological Organization, and other  
5 international entities, as part of international efforts to  
6 develop a fully functional global tsunami forecast and  
7 warning system comprising regional tsunami warning net-  
8 works, modeled on the International Tsunami Warning  
9 System of the Pacific.

10 (b) INTERNATIONAL TSUNAMI INFORMATION CEN-  
11 TER.—The Administrator of the National Oceanic and At-  
12 mospheric Administration, through the National Weather  
13 Service, shall operate an International Tsunami Informa-  
14 tion Center to improve tsunami preparedness for all Pa-  
15 cific Ocean nations participating in the International Tsu-  
16 nami Warning System of the Pacific, and which may also  
17 provide such assistance to other nations participating in  
18 a global tsunami warning system established through the  
19 Intergovernmental Oceanographic Commission. As part of  
20 its responsibilities around the world, the Center shall—

21 (1) monitor international tsunami warning ac-  
22 tivities around the world;

23 (2) assist member states in establishing na-  
24 tional warning systems, and make information avail-

1       able on current technologies for tsunami warning  
2       systems;

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

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

8       (c) DETECTION EQUIPMENT; TECHNICAL ADVICE  
9       AND TRAINING.—In carrying out this section, the Na-  
10      tional Weather Service—

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

17           (2) may establish a process for transfer of de-  
18      tection and communication technology to affected  
19      nations for the purposes of establishing the inter-  
20      national tsunami warning system.

21       (d) DATA-SHARING REQUIREMENT.—The National  
22      Weather Service may not provide assistance under this  
23      section for any nation unless that nation agrees to share  
24      relevant data or products associated with the development

1 and operation of the tsunami warning network in that re-  
2 gion.

3 **SEC. 7. AUTHORIZATION OF APPROPRIATIONS.**

4 There are authorized to be appropriated to the Ad-  
5 ministrator of the National Oceanic and Atmospheric Ad-  
6 ministration \$30,000,000 for each of fiscal years 2006  
7 through 2008 to carry out this Act. Of the amounts appro-  
8 priated for any fiscal year authorized under this Act—

9 (1) 70 percent shall be for the tsunami forecast  
10 and warning systems under section 3 and inter-  
11 national activities under section 6;

12 (2) 20 percent shall be for the tsunami hazard  
13 mitigation program under section 4; and

14 (3) 10 percent shall be for the tsunami research  
15 program under section 5.

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