

113TH CONGRESS
2D SESSION

S. 2181

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

IN THE SENATE OF THE UNITED STATES

MARCH 27, 2014

Mr. BEGICH (for himself, Ms. CANTWELL, and Mr. SCHATZ) introduced the following bill; which was read twice and referred to the Committee on Commerce, Science, and Transportation

A BILL

To authorize and strengthen the tsunami detection, forecast, warning, research, and mitigation program of the National Oceanic and Atmospheric Administration, 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 Warning and
5 Education Reauthorization Act of 2014”.

1 **SEC. 2. REFERENCES TO THE TSUNAMI WARNING AND EDU-**
2 **CATION ACT.**

3 Except as otherwise expressly provided, whenever in
4 this Act an amendment or repeal is expressed in terms
5 of an amendment to, or repeal of, a section or other provi-
6 sion, the reference shall be considered to be made to a
7 section or other provision of title VIII of the Magnuson-
8 Stevens Fishery Conservation and Management Reauthor-
9 ization Act of 2006 (Public Law 109–479; 33 U.S.C. 3201
10 et seq.), also known as the “Tsunami Warning and Edu-
11 cation Act”.

12 **SEC. 3. EXPANSION OF PURPOSES OF TSUNAMI WARNING**
13 **AND EDUCATION ACT.**

14 Section 803 (33 U.S.C. 3202) is amended—

15 (1) in paragraph (1), by inserting “research,”
16 after “warnings,”;

17 (2) by amending paragraph (2) to read as fol-
18 lows:

19 “(2) to enhance and modernize the tsunami
20 warning system of the United States to increase the
21 accuracy of forecasts and warnings and reduce false
22 alarms;”;

23 (3) in paragraph (3), by inserting “and estab-
24 lish standards for” before “mapping,”;

25 (4) in paragraph (4)—

1 (A) by striking “and increase” and insert-
 2 ing “, increase, and establish standards for”;
 3 and

4 (B) by inserting “, including the warning
 5 signs of locally generated tsunamis” after “ap-
 6 proaching”;

7 (5) in paragraph (5), by striking “, including
 8 the Indian Ocean; and” and inserting a semicolon;
 9 (6) by redesignating paragraph (6) as para-
 10 graph (7); and

11 (7) by inserting after paragraph (5), the fol-
 12 lowing:

13 “(6) to foster resilient communities in the face
 14 of tsunami and other coastal hazards; and”.

15 **SEC. 4. MODIFICATION OF TSUNAMI FORECASTING AND**
 16 **WARNING PROGRAM.**

17 (a) COMPONENTS.—Subsection (b) of section 804 (33
 18 U.S.C. 3203) is amended—

19 (1) in paragraph (1), by inserting “or main-
 20 tained” after “established”;

21 (2) in paragraph (4), by inserting “and safe-
 22 guarding port and harbor operations” after “com-
 23 munities”;

1 (3) in paragraph (6), by inserting “, including
2 regional seismic networks previously installed in
3 areas of sparse instrumentation” after “networks”;

4 (4) in paragraph (7)—

5 (A) by inserting “, including graphical
6 warning products,” after “warnings”; and

7 (B) by inserting “and Wireless Emergency
8 Alerts” after “Hazards Program”; and

9 (5) in paragraph (8), by inserting “and com-
10 mercial and Federal undersea communications ca-
11 bles” after “technologies”.

12 (b) TSUNAMI WARNING SYSTEM.—Subsection (c) of
13 such section is amended to read as follows:

14 “(c) TSUNAMI WARNING SYSTEM.—The program
15 under this section shall operate a tsunami warning system
16 that—

17 “(1) is capable of forecasting tsunamis any-
18 where in the Pacific and Arctic Ocean regions and
19 providing adequate warnings;

20 “(2) is capable of providing adequate warnings
21 in areas of the Atlantic Ocean, Caribbean Sea, and
22 Gulf of Mexico that are determined—

23 “(A) to be geologically active, or to have
24 significant 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 and

5 “(3) supports other international tsunami fore-
6 casting and warning efforts.”.

7 (c) TSUNAMI WARNING CENTERS.—Subsection (d) of
8 such section is amended to read as follows:

9 “(d) TSUNAMI WARNING CENTERS.—

10 “(1) ESTABLISHMENT.—The Administrator
11 shall establish or maintain, as part of the National
12 Centers for Environmental Prediction, centers to
13 support the tsunami warning system required by
14 subsection (c).

15 “(2) RESPONSIBILITIES.—The responsibilities
16 of the centers established or maintained pursuant to
17 paragraph (1) shall include the following:

18 “(A) Continuously monitoring data from
19 seismological, deep ocean, and tidal monitoring
20 stations.

21 “(B) Evaluating earthquakes that have the
22 potential to generate tsunamis.

23 “(C) Evaluating deep ocean buoy data and
24 tidal monitoring stations for indications of

1 tsunamis resulting from earthquakes and other
2 sources.

3 “(D) To the extent practicable, utilizing
4 ensemble models to predict tsunamis.

5 “(E) Ensuring supercomputing resources
6 of the National Centers for Environmental Pre-
7 diction are available to run, as rapidly as pos-
8 sible, such computer models as are needed for
9 purposes of the tsunami warning system oper-
10 ated pursuant to subsection (c).

11 “(F) Disseminating forecasts and tsunami
12 warning bulletins to Federal, State, and local
13 government officials and the public.

14 “(G) Developing outreach plans to ensure
15 close integration with local Weather Forecast
16 Offices of the National Weather Service and
17 emergency managers.

18 “(H) Working with local Weather Forecast
19 Offices to ensure they have the technical knowl-
20 edge and capability to disseminate tsunami
21 warnings to the communities they serve.

22 “(I) Evaluating effectiveness of warnings
23 and of coordination with local Weather Forecast
24 Offices after significant tsunami events.

1 “(J) Coordinating with the tsunami hazard
2 mitigation program conducted under section
3 805 to ensure ongoing sharing of information
4 between forecasters and emergency manage-
5 ment officials.

6 “(K) Making data gathered under this title
7 and post-warning analyses conducted by the
8 National Weather Service or other relevant Ad-
9 ministration offices available to researchers.

10 “(3) REDUNDANT WARNING CAPABILITY.—The
11 tsunami warning centers established or maintained
12 pursuant to paragraph (1), including the warning
13 centers in Hawaii and Alaska that were established
14 under this section and in operation on the day be-
15 fore the date of the enactment of the Tsunami
16 Warning and Education Reauthorization Act of
17 2014, shall maintain a redundant warning capability
18 and ability to perform back-up duties for each other.

19 “(4) COORDINATION WITH NATIONAL WEATHER
20 SERVICE.—The National Weather Service regions
21 and local forecast offices shall coordinate with the
22 centers established or maintained pursuant to para-
23 graph (1) to ensure that—

1 “(A) they have the technical knowledge
2 and capability to disseminate tsunami warnings
3 for the communities they serve; and

4 “(B) their connections with local emer-
5 gency management officials are leveraged for
6 optimally disseminating tsunami warnings and
7 forecasts.

8 “(5) STANDARDS.—The Administrator shall—

9 “(A) establish uniform operational proce-
10 dures for the centers established or maintained
11 pursuant to paragraph (1), including the em-
12 ployment of software applications, checklists,
13 decision support tools, and tsunami warning
14 products that have been standardized across the
15 program established under this section;

16 “(B) ensure that processes and products of
17 the warning system operated pursuant to sub-
18 section (c)—

19 “(i) reflect industry best practices;

20 “(ii) conform with internationally rec-
21 ognized standards for information tech-
22 nology; and

23 “(iii) conform to the maximum extent
24 practicable with other warning products

1 and practices of the National Weather
2 Service;

3 “(C) ensure that future adjustments to
4 operational protocols, processes, and warning
5 products—

6 “(i) are made consistently across the
7 warning system operated pursuant to sub-
8 section (c); and

9 “(ii) are applied in a uniform manner
10 across such warning system; and

11 “(D) promote standards for evaluating and
12 improving tsunami forecast models.

13 “(6) OUTREACH.—The Administrator shall en-
14 sure the tsunami warning centers established or
15 maintained pursuant to paragraph (1) develop and
16 carry out formal outreach plans.”.

17 (d) TRANSFER OF TECHNOLOGY; MAINTENANCE AND
18 UPGRADES.—Subsection (e) of such section is amended
19 to read as follows:

20 “(e) TRANSFER OF TECHNOLOGY; MAINTENANCE
21 AND UPGRADES.—In carrying out this section, the Admin-
22 istrator shall—

23 “(1) develop requirements for the equipment
24 used to forecast tsunamis, including—

1 “(A) provisions for multipurpose detection
2 platforms;

3 “(B) reliability and performance metrics;
4 and

5 “(C) to the maximum extent practicable,
6 how the equipment will be integrated with other
7 United States and global ocean and coastal ob-
8 servation systems, the global earth observing
9 system of systems, the global seismic networks,
10 and the Advanced National Seismic System;

11 “(2) develop and execute a plan for the transfer
12 of technology from ongoing research conducted as
13 part of the program established or maintained under
14 section 806 into the program under this section; and

15 “(3) ensure that maintaining operational tsu-
16 nami detection equipment is the highest priority
17 within the program carried out under this section.”.

18 (e) FEDERAL COOPERATION.—Subsection (f) of such
19 section is amended to read as follows:

20 “(f) FEDERAL COOPERATION.—When deploying and
21 maintaining tsunami detection technologies under the pro-
22 gram under this section, the Administrator shall—

23 “(1) identify which assets of other Federal
24 agencies are necessary to support such program; and

1 “(2) work with each agency identified under
2 paragraph (1)—

3 “(A) to acquire the agency’s assistance;
4 and

5 “(B) to prioritize the necessary assets.”.

6 (f) UNNECESSARY PROVISIONS.—Such section is fur-
7 ther amended by striking subsections (g) through (k).

8 **SEC. 5. MODIFICATION OF NATIONAL TSUNAMI HAZARD**
9 **MITIGATION PROGRAM.**

10 (a) IN GENERAL.—Section 805 (33 U.S.C. 3204) is
11 amended by striking subsections (a) through (d) and in-
12 serting the following:

13 “(a) PROGRAM REQUIRED.—The Administrator, in
14 consultation with the Administrator of the Federal Emer-
15 gency Management Agency and the heads of such other
16 agencies as the Administrator considers relevant, shall
17 conduct a community-based tsunami hazard mitigation
18 program to improve tsunami preparedness of at-risk areas
19 in the United States and the territories of the United
20 States.

21 “(b) PROGRAM COMPONENTS.—The program con-
22 ducted pursuant to subsection (a) shall include the fol-
23 lowing:

24 “(1) Technical and financial assistance to
25 coastal States, territories, tribes, and local govern-

1 ments to develop and implement activities under this
2 section.

3 “(2) Integration of tsunami preparedness and
4 mitigation programs into ongoing State-based haz-
5 ard warning, resilience planning, and risk manage-
6 ment activities, including predisaster planning, emer-
7 gency response, evacuation planning, disaster recov-
8 ery, hazard mitigation, and community development
9 and redevelopment programs in affected areas.

10 “(3) Activities to promote the adoption of tsu-
11 nami resilience, preparedness, warning, and mitiga-
12 tion measures by Federal, State, territorial, tribal,
13 and local governments and nongovernmental entities,
14 including educational and risk communication pro-
15 grams to discourage development in high-risk areas.

16 “(4) Development of regional tsunami hazard
17 and risk assessments, using inundation models that
18 meet programmatic standards for accuracy. Such re-
19 gional risk assessments may include the following:

20 “(A) The sources, sizes, and histories of
21 tsunamis in that region.

22 “(B) Inundation models and maps of crit-
23 ical infrastructure and socioeconomic vulner-
24 ability in areas subject to tsunami inundation.

1 “(C) Maps of evacuation areas and evacu-
2 ation routes.

3 “(D) Evaluations of the size of populations
4 that will require evacuation, including popu-
5 lations with special evacuation needs.

6 “(5) Community-based outreach and education
7 networks and programs to ensure community readi-
8 ness and resilience, including the following:

9 “(A) The implementation of technical
10 training and public education programs.

11 “(B) The development of decision support
12 tools.

13 “(C) The evaluation of effectiveness of tsu-
14 nami education efforts and development of edu-
15 cation guidelines based on that evidence as well
16 as the expertise of the Administration in hazard
17 communications.

18 “(6) Propagation of standards for community
19 planning, education, and training products, pro-
20 grams, and tools, including standards for—

21 “(A) mapping products;

22 “(B) inundation models, although national
23 standards for inundation models shall not pre-
24 vent States, territories, tribes, and local govern-
25 ments from designating additional areas as

1 being at-risk based on knowledge of local condi-
2 tions; and

3 “(C) effective emergency exercises.

4 “(c) AUTHORIZED ACTIVITIES.—In addition to activi-
5 ties conducted under subsection (b), the program con-
6 ducted pursuant to subsection (a) may include the fol-
7 lowing:

8 “(1) Multidisciplinary vulnerability assessment
9 research, education, and training to help integrate
10 risk management and resilience objective with com-
11 munity development planning and policies.

12 “(2) Risk management training for the public,
13 local officials, and institutions to enhance under-
14 standing and preparedness.

15 “(3) Development of practical applications for
16 existing or emerging technologies, such as modeling,
17 remote sensing, geospatial technology, engineering,
18 and observing systems.

19 “(4) Risk management and resilience data and
20 information services, including—

21 “(A) access to data and products derived
22 from observing and detection systems; and

23 “(B) development and maintenance of new
24 integrated data products to support risk assess-

1 ment, risk management, and resilience pro-
2 grams.

3 “(5) Risk notification systems that coordinate
4 with and build upon existing systems and actively
5 engage policy officials, government agencies, busi-
6 ness communities, nongovernmental organizations,
7 and the media.

8 “(d) COORDINATING COMMITTEE.—

9 “(1) IN GENERAL.—The Administrator shall es-
10 tablish a coordinating committee to assist the Ad-
11 ministrator in the conduct of the program required
12 by subsection (a).

13 “(2) COMPOSITION.—The coordinating com-
14 mittee shall be composed of such representatives as
15 the Administrator considers appropriate to represent
16 Federal, State, tribal, territorial, and local govern-
17 ments.

18 “(3) SUBCOMMITTEES.—The Administrator
19 may approve the formation of subcommittees to ad-
20 dress specific program components or regional
21 issues.

22 “(4) RESPONSIBILITIES.—The coordinating
23 committee shall—

24 “(A) recommend how funds appropriated
25 or otherwise made available to carry out the

1 program required by subsection (a) should be
2 allocated;

3 “(B) ensure that areas described in section
4 804(c) in the United States and its territories
5 have the opportunity to participate in the pro-
6 gram;

7 “(C) provide recommendations to the Ad-
8 ministrator on how to improve continuously the
9 TsunamiReady program, particularly on ways
10 to make communities more tsunami resilient
11 through the use of inundation maps and models
12 and other hazard mitigation practices; and

13 “(D) ensure that all components of the
14 program required by subsection (a) are inte-
15 grated with ongoing State-based hazard warn-
16 ing, risk management, and resilience activities,
17 including—

18 “(i) integrating with emergency re-
19 sponse plans, disaster recovery, hazard
20 mitigation, and community development
21 programs in affected areas; and

22 “(ii) integrating information to assist
23 in tsunami evacuation route planning.

24 “(5) EXEMPTION FROM FACA TERMINATION RE-
25 QUIREMENT.—Section 14 of the Federal Advisory

1 Committee Act (5 U.S.C. App. 14) shall not apply
2 to the committee established pursuant to paragraph
3 (1).”.

4 (b) REPORT ON ACCREDITATION OF TSUNAMIREADY
5 PROGRAM.—Not later than 180 days after the date of the
6 enactment of this Act, the Administrator of the National
7 Oceanic and Atmospheric Administration shall submit to
8 the Committee on Commerce, Science, and Transportation
9 of the Senate and the Committee on Science, Space, and
10 Technology of the House of Representatives a report on
11 which authorities and activities would be needed to have
12 the TsunamiReady program of the National Weather
13 Service accredited by the Emergency Management Accred-
14 itation Program.

15 **SEC. 6. MODIFICATION OF TSUNAMI RESEARCH PROGRAM.**

16 Section 806 (33 U.S.C. 3205) is amended—

17 (1) in the matter before paragraph (1), by
18 striking “The Administrator shall” and all that fol-
19 lows through “establish or maintain” and inserting
20 the following:

21 “(a) IN GENERAL.—The Administrator shall, in con-
22 sultation with such other Federal agencies, State govern-
23 ments, and academic institutions as the Administrator
24 considers appropriate, the coordinating committee estab-

lished under section 805(d), and the panel established
under section 808(a), establish or maintain”;

(2) in subsection (a), as designated by paragraph (1), by striking “and assessment for tsunami tracking and numerical forecast modeling. Such research program shall—” and inserting the following: “assessment for tsunami tracking and numerical forecast modeling, and standards development.

“(b) RESPONSIBILITIES.—The research program established and maintained pursuant to subsection (a) shall—”; and

(3) in subsection (b), as designated by paragraph (2)—

(A) in paragraph (3)—

(i) by striking “include” and inserting “conduct”; and

(ii) by striking “and” at the end;

(B) by redesignating paragraph (4) as paragraph (5); and

(C) by inserting after paragraph (3) the following:

“(4) develop the technical basis for validation of tsunami maps, numerical tsunami models, digital elevation models, and forecasts; and”.

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

3 Section 807 (33 U.S.C. 3206) is amended—

4 (1) by amending subsection (a) to read as fol-
5 lows:

6 “(a) SUPPORT FOR DEVELOPMENT OF INTER-
7 NATIONAL TSUNAMI WARNING SYSTEM.—The Adminis-
8 trator shall, in coordination with the Secretary of State
9 and in consultation with such other agencies as the Ad-
10 ministrator considers relevant, provide technical assistance
11 and training to the Intergovernmental Oceanographic
12 Commission of the United Nations Educational, Scientific
13 and Cultural Organization, the World Meteorological Or-
14 ganization of the United Nations, and such other inter-
15 national entities as the Administrator considers appro-
16 priate, as part of international efforts to develop a fully
17 functional global tsunami forecast and warning system
18 comprising regional tsunami warning networks.”;

19 (2) by striking subsection (b); and

20 (3) by redesignating subsections (c) and (d) as
21 subsections (b) and (c), respectively.

22 **SEC. 8. TSUNAMI SCIENCE, TECHNOLOGY, AND PREPARED-**
23 **NESS PANEL.**

24 (a) IN GENERAL.—Title VIII of the Magnuson-Ste-
25 vens Fishery Conservation and Management Reauthoriza-

tion Act of 2006 (Public Law 109–479; 33 U.S.C. 3201 et seq.) is amended—

(1) by redesignating section 808 as section 809;

and

(2) by inserting after section 807 the following:

“SEC. 808. TSUNAMI SCIENCE, TECHNOLOGY, AND PREPAREDNESS PANEL.

“(a) ESTABLISHMENT.—

“(1) IN GENERAL.—The Administrator shall establish a panel to provide advice to the Administrator on matters regarding tsunami science, technology, and preparedness.

“(2) SUBCOMMITTEE OF SCIENCE ADVISORY BOARD.—The panel established pursuant to paragraph (1) shall be a standing subcommittee of the Science Advisory Board of the Administration.

“(b) MEMBERSHIP.—

“(1) COMPOSITION.—The panel established under subsection (a) shall be composed of not fewer than 7 members selected by the Administrator from among individuals who have academic or practical expertise in physical sciences, social sciences, information technology, coastal resilience, emergency management, or such other disciplines as the Administrator considers appropriate.

1 “(2) FEDERAL EMPLOYMENT.—No member of
2 the panel established pursuant to subsection (a) may
3 be a Federal employee.

4 “(c) RESPONSIBILITIES.—Not less frequently than
5 once every 2 years, the panel established under subsection
6 (a) shall—

7 “(1) review the activities of the Federal Govern-
8 ment (including the activities of the program con-
9 ducted under section 805) relating to tsunami re-
10 search, forecasting, warning, and preparation;

11 “(2) submit to the Administrator and such oth-
12 ers as the Administrator considers appropriate—

13 “(A) the findings of the panel with respect
14 to the most recent review conducted pursuant
15 to paragraph (1); and

16 “(B) such recommendations for legislative
17 or administrative action as the panel considers
18 appropriate to improve Federal tsunami re-
19 search, forecasting, warning, and preparation.

20 “(d) BIENNIAL REPORTS TO CONGRESS.—Not less
21 frequently than once every 2 years, the Administrator
22 shall submit to the Committee on Commerce, Science, and
23 Transportation of the Senate and the Committee on
24 Science, Space, and Technology of the House of Rep-

1 representatives a report on the findings and recommendations
 2 received by the Administrator under subsection (c)(2).”.

3 (b) CLERICAL AMENDMENT.—The table of contents
 4 in section 1(b) of such Act is amended by striking the
 5 item relating to section 808 and inserting the following:

“Sec. 808. Tsunami science, technology, and preparedness panel.

“Sec. 809. Authorization of appropriations.”.

6 **SEC. 9. REPORT ON IMPLEMENTATION OF TSUNAMI WARN-**
 7 **ING AND EDUCATION ACT.**

8 (a) IN GENERAL.—Not later than 1 year after the
 9 date of the enactment of this Act, the Administrator of
 10 the National Oceanic and Atmospheric Administration
 11 shall submit to Congress a report on the implementation
 12 of the Tsunami Warning and Education Act (33 U.S.C.
 13 3201 et seq.), as amended by this Act.

14 (b) ELEMENTS.—The report required by subsection
 15 (a) shall include the following:

16 (1) A detailed description of the progress made
 17 in implementing sections 804(d)(5), 805(b)(6), and
 18 806(b)(4) of the Tsunami Warning and Education
 19 Act (33 U.S.C. 3203, 3204, 3205), as amended by
 20 this Act.

21 (2) A description of the ways that tsunami
 22 warnings and warning products issued by the Tsu-
 23 nami Forecasting and Warning Program established
 24 under section 804 of such Act (33 U.S.C. 3203), as

1 amended by this Act, can be standardized and
2 streamlined with warnings and warning products for
3 hurricanes, coastal storms, and other coastal flood-
4 ing events.

5 **SEC. 10. AUTHORIZATION OF APPROPRIATIONS.**

6 Section 809, as redesignated by section 8(a)(1), is
7 amended—

8 (1) in paragraph (4)(B), by striking “and” at
9 the end;

10 (2) in paragraph (5)(B), by striking the period
11 at the end and inserting “; and”; and

12 (3) by adding at the end the following:

13 “(6) \$36,000,000 for each of fiscal years 2015
14 through 2019, of which—

15 “(A) not less than 27 percent of the
16 amount appropriated shall be for activities
17 under the tsunami hazard mitigation program
18 under section 805; and

19 “(B) not less than 8 percent of the amount
20 appropriated shall be for the tsunami research
21 program under section 806.”.

22 **SEC. 11. REPEAL OF DUPLICATE PROVISIONS OF LAW.**

23 (a) REPEAL.—Public Law 109–424 (120 Stat. 2902)
24 is hereby repealed.

1 (b) CONSTRUCTION.—Nothing in this section shall be
2 construed to repeal, or affect in any way, title VIII of the
3 Magnuson-Stevens Fishery Conservation and Manage-
4 ment Reauthorization Act of 2006 (Public Law 109–479).

