

114TH CONGRESS
1ST SESSION

S. 533

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

FEBRUARY 23, 2015

Ms. CANTWELL (for herself, Mr. SULLIVAN, 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,
5 Education, and Research Act of 2015”.

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 the Tsunami Warning and
8 Education Act (Public Law 109–424; 33 U.S.C. 3201 et
9 seq.).

10 **SEC. 3. EXPANSION OF PURPOSES OF TSUNAMI WARNING**
11 **AND EDUCATION ACT.**

12 Section 3 (33 U.S.C. 3202) is amended—

13 (1) in paragraph (1), by inserting “research,”
14 after “warnings,”;

15 (2) by amending paragraph (2) to read as fol-
16 lows:

17 “(2) to enhance and modernize the existing
18 United States Tsunami Warning System to increase
19 the accuracy of forecasts and warnings, to ensure
20 full coverage of tsunami threats to the United States
21 with a network of detection assets, and to reduce
22 false alarms;”;

23 (3) by amending paragraph (3) to read as fol-
24 lows:

25 “(3) to improve and develop standards and
26 guidelines for mapping, modeling, and assessment

1 efforts to improve tsunami detection, forecasting,
2 warnings, notification, mitigation, resiliency, re-
3 sponse, outreach, and recovery;”;

4 (4) by redesignating paragraphs (4), (5), and
5 (6) as paragraphs (5), (6), and (8), respectively;

6 (5) by inserting after paragraph (3) the fol-
7 lowing:

8 “(4) to improve research efforts related to im-
9 proving tsunami detection, forecasting, warnings, no-
10 tification, mitigation, resiliency, response, outreach,
11 and recovery;”;

12 (6) in paragraph (5), as so redesignated—

13 (A) by striking “and increase” and insert-
14 ing “, increase, and develop uniform standards
15 and guidelines for”; and

16 (B) by inserting “, including the warning
17 signs of locally generated tsunami” after “ap-
18 proaching”;

19 (7) in paragraph (6), as so redesignated, by
20 striking “, including the Indian Ocean; and” and in-
21 sserting a semicolon; and

22 (8) by inserting after paragraph (6), as so re-
23 designated, the following:

24 “(7) to foster resilient communities in the face
25 of tsunami and other similar coastal hazards; and”.

1 **SEC. 4. MODIFICATION OF TSUNAMI FORECASTING AND**
2 **WARNING PROGRAM.**

3 (a) IN GENERAL.—Subsection (a) of section 4 (33
4 U.S.C. 3203) is amended by striking “Atlantic Ocean,
5 Caribbean Sea, and Gulf of Mexico region” and inserting
6 “Atlantic Ocean region, including the Caribbean Sea and
7 the Gulf of Mexico”.

8 (b) COMPONENTS.—Subsection (b) of such section 4
9 is amended—

10 (1) in paragraph (1), by striking “established”
11 and inserting “supported or maintained”;

12 (2) by redesignating paragraphs (7) through
13 (9) as paragraphs (10) through (12), respectively;

14 (3) by redesignating paragraphs (2) through
15 (6) as paragraphs (3) through (7), respectively;

16 (4) by inserting after paragraph (1) the fol-
17 lowing:

18 “(2) to the degree practicable, maintain not less
19 than 80 percent of the Deep-Ocean Assessment and
20 Reporting of Tsunamis buoy array at operational ca-
21 pacity to optimize data reliability;”;

22 (5) in paragraph (5), as redesignated by para-
23 graph (3), by inserting “and safeguarding port and
24 harbor operations” after “communities”;

25 (6) by inserting after paragraph (7), as redesi-
26 gnated by paragraph (3), the following:

1 “(8) include a cooperative effort among the Ad-
2 ministration, the United States Geological Survey,
3 and the National Science Foundation under which
4 the Director of the United States Geological Survey
5 and the Director of the National Science Foundation
6 shall provide rapid and reliable seismic information
7 to the Administrator from international and domes-
8 tic seismic networks;

9 “(9) support seismic stations installed before
10 the date of the enactment of the Tsunami Warning,
11 Education, and Research Act of 2015 to supplement
12 coverage in areas of sparse instrumentation;”;

13 (7) in paragraph (10), as redesignated by para-
14 graph (2)—

15 (A) by inserting “, including graphical
16 warning products,” after “warnings”;

17 (B) by inserting “, territories,” after
18 “States”; and

19 (C) by inserting “and Wireless Emergency
20 Alerts” after “Hazards Program”; and

21 (8) in paragraph (11), as redesignated by para-
22 graph (2)—

23 (A) by inserting “provide and” before
24 “allow”; and

1 (B) by inserting “and commercial and
2 Federal undersea communications cables” after
3 “observing technologies”.

4 (c) TSUNAMI WARNING SYSTEM.—Subsection (c) of
5 such section 4 is amended to read as follows:

6 “(c) TSUNAMI WARNING SYSTEM.—The program
7 under this section shall operate a tsunami warning system
8 that—

9 “(1) is capable of forecasting a tsunami, includ-
10 ing forecasting tsunami arrival time and inundation
11 estimates, anywhere in the Pacific and Arctic Ocean
12 regions and providing adequate warnings;

13 “(2) is capable of forecasting and providing
14 adequate warnings, including tsunami arrival time
15 and inundation models where applicable, in areas of
16 the Atlantic Ocean, including the Caribbean Sea and
17 Gulf of Mexico, that are determined—

18 “(A) to be geologically active, or to have
19 significant potential for geological activity; and

20 “(B) to pose significant risks of tsunami
21 for States along the coastal areas of the Atlan-
22 tic Ocean, Caribbean Sea, or Gulf of Mexico;
23 and

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

1 (d) TSUNAMI WARNING CENTERS.—Subsection (d)
2 of such section 4 is amended to read as follows:

3 “(d) TSUNAMI WARNING CENTERS.—

4 “(1) IN GENERAL.—The Administrator shall
5 support or maintain centers to support the tsunami
6 warning system required by subsection (c). The Cen-
7 ters shall include—

8 “(A) the National Tsunami Warning Cen-
9 ter, located in Alaska, which is primarily re-
10 sponsible for Alaska and the continental United
11 States;

12 “(B) the Pacific Tsunami Warning Center,
13 located in Hawaii, which is primarily respon-
14 sible for Hawaii, the Caribbean, and other
15 areas of the Pacific not covered by the National
16 Center; and

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

20 “(2) RESPONSIBILITIES.—The responsibilities
21 of the centers supported or maintained pursuant to
22 paragraph (1) shall include the following:

23 “(A) Continuously monitoring data from
24 seismological, deep ocean, coastal sea level, and

1 tidal monitoring stations and other data sources
2 as may be developed and deployed.

3 “(B) Evaluating earthquakes, landslides,
4 and volcanic eruptions that have the potential
5 to generate tsunami.

6 “(C) Evaluating deep ocean buoy data and
7 tidal monitoring stations for indications of a
8 tsunami resulting from earthquakes and other
9 sources.

10 “(D) To the extent practicable, utilizing a
11 range of models, including ensemble models, to
12 predict tsunami, including arrival times, flood-
13 ing estimates, coastal and harbor currents, and
14 duration.

15 “(E) Using data from the Integrated
16 Ocean Observing System of the Administration
17 in coordination with regional associations to cal-
18 culate new inundation estimates and periodi-
19 cally update existing inundation estimates.

20 “(F) Ensuring supercomputing resources
21 of the National Centers for Environmental Pre-
22 diction are available to run, as rapidly as pos-
23 sible, such computer models as are needed for
24 purposes of the tsunami warning system oper-
25 ated pursuant to subsection (c).

1 “(G) Disseminating forecasts and tsunami
2 warning bulletins to Federal, State, tribal, and
3 local government officials and the public.

4 “(H) Coordinating with the tsunami haz-
5 ard mitigation program conducted under section
6 5 to ensure ongoing sharing of information be-
7 tween forecasters and emergency management
8 officials.

9 “(I) Evaluating and recommending proce-
10 dures for ports and harbors at risk of tsunami
11 inundation, including review of readiness, re-
12 sponse, and communication strategies to ensure
13 coordination and data sharing with the Coast
14 Guard.

15 “(J) Making data gathered under this Act
16 and post-warning analyses conducted by the
17 National Weather Service or other relevant Ad-
18 ministration offices available to the public.

19 “(K) Integrating and modernizing the pro-
20 gram operated under this section with advances
21 in tsunami science to improve performance
22 without compromising service.

23 “(3) FAIL-SAFE WARNING CAPABILITY.—The
24 tsunami warning centers supported or maintained
25 pursuant to paragraph (1) shall maintain a fail-safe

1 warning capability and perform back-up duties for
2 each other.

3 “(4) COORDINATION WITH NATIONAL WEATHER
4 SERVICE.—The Administrator shall coordinate with
5 the forecast offices of the National Weather Service,
6 the centers supported or maintained pursuant to
7 paragraph (1), and such program offices of the Ad-
8 ministration as the Administrator or the coordi-
9 nating committee consider appropriate to ensure
10 that regional and local forecast offices—

11 “(A) have the technical knowledge and ca-
12 pability to disseminate tsunami warnings for
13 the communities they serve;

14 “(B) leverage connections with local emer-
15 gency management officials for optimally dis-
16 seminating tsunami warnings and forecasts;
17 and

18 “(C) implement mass communication tools
19 in effect on the day before the date of the en-
20 actment of the Tsunami Warning, Education,
21 and Research Act of 2015 used by the National
22 Weather Service on such date and newer mass
23 communication technologies as they are devel-
24 oped as a part of the Weather-Ready Nation
25 program of the Administration, or otherwise,

1 for the purpose of timely and effective delivery
2 of tsunami warnings.

3 “(5) UNIFORM OPERATING PROCEDURES.—The
4 Administrator shall—

5 “(A) develop uniform operational proce-
6 dures for the centers supported or maintained
7 pursuant to paragraph (1), including the use of
8 software applications, checklists, decision sup-
9 port tools, and tsunami warning products that
10 have been standardized across the program sup-
11 ported under this section;

12 “(B) ensure that processes and products of
13 the warning system operated pursuant to sub-
14 section (c)—

15 “(i) reflect industry best practices
16 when practicable;

17 “(ii) conform to the maximum extent
18 practicable with internationally recognized
19 standards for information technology; and

20 “(iii) conform to the maximum extent
21 practicable with other warning products
22 and practices of the National Weather
23 Service;

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

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

7 “(ii) are applied in a uniform manner
8 across such warning system;

9 “(D) establish a systematic method for in-
10 formation technology product development to
11 improve long-term technology planning efforts;
12 and

13 “(E) disseminate guidelines and metrics
14 for evaluating and improving tsunami forecast
15 models.

16 “(6) AVAILABLE RESOURCES.—The Adminis-
17 trator, through the National Weather Service, shall
18 ensure that resources are available to fulfill the obli-
19 gations of this Act. This includes ensuring super-
20 computing resources are available to run such com-
21 puter models as are needed for purposes of the tsu-
22 nami warning system operated pursuant to sub-
23 section (c).”.

1 (e) TRANSFER OF TECHNOLOGY; MAINTENANCE AND
2 UPGRADES.—Subsection (e) of such section 4 is amended
3 to read as follows:

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

7 “(1) develop requirements for the equipment
8 used to forecast a tsunami, including—

9 “(A) provisions for multipurpose detection
10 platforms;

11 “(B) reliability and performance metrics;
12 and

13 “(C) to the maximum extent practicable,
14 requirements for the integration of equipment
15 with other United States and global ocean and
16 coastal observation systems, the global Earth
17 observing system of systems, the global seismic
18 networks, and the Advanced National Seismic
19 System;

20 “(2) develop and execute a plan for the transfer
21 of technology from ongoing research conducted as
22 part of the program supported or maintained under
23 section 6 into the program under this section; and

1 “(3) ensure that the Administration’s oper-
2 ational tsunami detection equipment is properly
3 maintained.”.

4 (f) FEDERAL COOPERATION.—Subsection (f) of such
5 section 4 is amended to read as follows:

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

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

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

13 “(A) to acquire the agency’s assistance;
14 and

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

16 (g) UNNECESSARY PROVISIONS.—Such section 4 is
17 further amended—

18 (1) by striking subsections (g) and (i) through
19 (k); and

20 (2) by redesignating subsection (h) as sub-
21 section (g).

22 (h) CONGRESSIONAL NOTIFICATIONS.—Subsection
23 (g) of such section, as redesignated by subsection (g)(2),
24 is amended—

1 (1) by redesignating paragraphs (1) and (2) as
2 subparagraphs (A) and (B), respectively, and mov-
3 ing such subparagraphs 2 ems to the right;

4 (2) in the matter before subparagraph (A), as
5 redesignated by paragraph (1), by striking “The Ad-
6 ministrators” and inserting the following:

7 “(1) IN GENERAL.—The Administrator”;

8 (3) in paragraph (1), as redesignated by para-
9 graph (2)—

10 (A) in subparagraph (A), as redesignated
11 by paragraph (1), by striking “and” at the end;

12 (B) in subparagraph (B), as redesignated
13 by paragraph (1), by striking the period at the
14 end and inserting “; and”; and

15 (C) by adding at the end the following:

16 “(C) the occurrence of a significant tsu-
17 nami warning.”; and

18 (4) by adding at the end the following:

19 “(2) CONTENTS.—In a case in which notice is
20 submitted under paragraph (1) within 90 days of a
21 significant tsunami warning described in subpara-
22 graph (C) of such paragraph, such notice shall in-
23 clude brief information and analysis of—

24 “(A) the accuracy of the tsunami model
25 used;

1 “(B) the specific deep ocean or other moni-
 2 toring equipment that detected the incident, as
 3 well as the deep ocean or other monitoring
 4 equipment that did not detect the incident due
 5 to malfunction or otherwise;

6 “(C) the effectiveness of the warning com-
 7 munication procedures including the integration
 8 of warnings with State, territory, local, and
 9 tribal partners in the affected area under the
 10 jurisdiction of the National Weather Service;
 11 and

12 “(D) such other findings as the Adminis-
 13 trator considers appropriate.”.

14 **SEC. 5. MODIFICATION OF NATIONAL TSUNAMI HAZARD**
 15 **MITIGATION PROGRAM.**

16 (a) **IN GENERAL.**—Section 5 (33 U.S.C. 3204) is
 17 amended by striking subsections (a) through (d) and in-
 18 serting the following:

19 “(a) **PROGRAM REQUIRED.**—The Administrator
 20 shall, in consultation with the Administrator of the Fed-
 21 eral Emergency Management Agency and the heads of
 22 such other agencies as the Administrator considers rel-
 23 evant, conduct a community-based tsunami hazard mitiga-
 24 tion program to improve tsunami preparedness and resil-

1 iency of at-risk areas in the United States and the terri-
2 tories of the United States.

3 “(b) PROGRAM COMPONENTS.—The Program con-
4 ducted pursuant to subsection (a) shall include the fol-
5 lowing:

6 “(1) Technical and financial assistance to
7 coastal States, territories, tribes, and local govern-
8 ments to develop and implement activities under this
9 section.

10 “(2) Integration of tsunami preparedness and
11 mitigation programs into ongoing State-based haz-
12 ard warning, resilience planning, and risk manage-
13 ment activities, including predisaster planning, emer-
14 gency response, evacuation planning, disaster recov-
15 ery, hazard mitigation, and community development
16 and redevelopment planning programs in affected
17 areas.

18 “(3) Activities to promote the adoption of tsu-
19 nami resilience, preparedness, warning, and mitiga-
20 tion measures by Federal, State, territorial, tribal,
21 and local governments and nongovernmental entities,
22 including educational and risk communication pro-
23 grams to discourage development in high-risk areas.

1 “(4) Activities to support the development of
2 regional tsunami hazard and risk assessments. Such
3 regional risk assessments may include the following:

4 “(A) The sources, sizes, and other relevant
5 historical data of tsunami in the region.

6 “(B) Inundation models and maps of crit-
7 ical infrastructure and socioeconomic vulner-
8 ability in areas subject to tsunami inundation.

9 “(C) Maps of evacuation areas and evacu-
10 ation routes, including, when appropriate, traf-
11 fic studies that evaluate the viability of evacu-
12 ation routes.

13 “(D) Evaluations of the size of populations
14 that will require evacuation, including popu-
15 lations with special evacuation needs.

16 “(E) Evaluations and technical assistance
17 for vertical evacuation structure planning for
18 communities where models indicate limited or
19 no ability for timely evacuation, especially in
20 areas at risk of near shore generated tsunami.

21 “(F) Evaluation of at-risk ports and har-
22 bors.

23 “(5) Activities to promote preparedness in at-
24 risk ports and harbors, including the following:

1 “(A) Evaluation and recommendation of
2 procedures for ports and harbors in the event of
3 a distant or near-field tsunami.

4 “(B) A review of readiness, response, and
5 communication strategies to ensure coordina-
6 tion and data sharing with the Coast Guard.

7 “(6) Activities to support the development of
8 community-based outreach and education programs
9 to ensure community readiness and resilience, in-
10 cluding the following:

11 “(A) The development, implementation,
12 and assessment of technical training and public
13 education programs, including education pro-
14 grams that address unique characteristics of
15 distant and near-field tsunami.

16 “(B) The development of decision support
17 tools.

18 “(C) The incorporation of social science re-
19 search into community readiness and resilience
20 efforts.

21 “(D) The development of evidence-based
22 education guidelines.

23 “(7) Dissemination of guidelines and standards
24 for community planning, education, and training
25 products, programs, and tools, including—

1 “(A) standards for—
2 “(i) mapping products;
3 “(ii) inundation models; and
4 “(iii) effective emergency exercises;
5 and
6 “(B) recommended guidance for at-risk
7 port and harbor tsunami warning, evacuation,
8 and response procedures in coordination with
9 the Coast Guard.

10 “(c) AUTHORIZED ACTIVITIES.—In addition to activi-
11 ties conducted under subsection (b), the program con-
12 ducted pursuant to subsection (a) may include the fol-
13 lowing:

14 “(1) Multidisciplinary vulnerability assessment
15 research, education, and training to help integrate
16 risk management and resilience objectives with com-
17 munity development planning and policies.

18 “(2) Risk management training for local offi-
19 cials and community organizations to enhance un-
20 derstanding and preparedness.

21 “(3) Interagency, Federal, State, tribal, and
22 territorial intergovernmental tsunami response exer-
23 cise planning and implementation in high-risk areas.

24 “(4) Development of practical applications for
25 existing or emerging technologies, such as modeling,

1 remote sensing, geospatial technology, engineering,
2 and observing systems.

3 “(5) Risk management, risk assessment, and
4 resilience data and information services, including—

5 “(A) access to data and products derived
6 from observing and detection systems; and

7 “(B) development and maintenance of new
8 integrated data products to support risk man-
9 agement, risk assessment, and resilience pro-
10 grams.

11 “(6) Risk notification systems that coordinate
12 with and build upon existing systems and actively
13 engage decisionmakers, State, local, tribal, and terri-
14 torial governments and agencies, business commu-
15 nities, nongovernmental organizations, and the
16 media.

17 “(d) COORDINATING COMMITTEE.—

18 “(1) IN GENERAL.—The Administrator shall
19 maintain a coordinating committee to assist the Ad-
20 ministrator in the conduct of the program required
21 by subsection (a).

22 “(2) COMPOSITION.—The coordinating com-
23 mittee shall be composed of members as follows:

24 “(A) Representatives of States and terri-
25 tories most at risk from tsunami, including

1 Alaska, Washington, Oregon, California, Ha-
2 waii, Puerto Rico, Guam, and American Samoa.

3 “(B) Such other members as the Adminis-
4 trator considers appropriate to represent Fed-
5 eral, State, tribal, territorial, and local govern-
6 ments.

7 “(3) SUBCOMMITTEES.—The Administrator
8 may approve the formation of subcommittees to ad-
9 dress specific program components or regional
10 issues.

11 “(4) RESPONSIBILITIES.—The coordinating
12 committee shall—

13 “(A) provide feedback on how funds should
14 be prioritized to carry out the program required
15 by subsection (a);

16 “(B) ensure that areas described in section
17 4(e) in the United States and its territories
18 have the opportunity to participate in the pro-
19 gram;

20 “(C) provide recommendations to the Ad-
21 ministrator on how to improve and continuously
22 advance the TsunamiReady program of the Na-
23 tional Weather Service, particularly on ways to
24 make communities more tsunami resilient

1 through the use of inundation maps and models
2 and other hazard mitigation practices;

3 “(D) ensure that all components of the
4 program required by subsection (a) are inte-
5 grated with ongoing State based hazard warn-
6 ing, risk management, and resilience activities,
7 including—

8 “(i) integrating activities with emer-
9 gency response plans, disaster recovery,
10 hazard mitigation, and community develop-
11 ment programs in affected areas; and

12 “(ii) integrating information to assist
13 in tsunami evacuation route planning.

14 “(5) EXEMPTION FROM FACA TERMINATION RE-
15 QUIREMENT.—Section 14 of the Federal Advisory
16 Committee Act (5 U.S.C. App. 14) shall not apply
17 to the committee established and maintained pursu-
18 ant to paragraph (1).

19 “(e) NO PREEMPTION WITH RESPECT TO DESIGNA-
20 TION OF AT-RISK AREAS.—The establishment of national
21 standards for inundation models under this section shall
22 not prevent States, territories, tribes, and local govern-
23 ments from designating additional areas as being at risk
24 based on knowledge of local conditions.

1 “(f) NO NEW REGULATORY AUTHORITY.—Nothing
2 in this Act may be construed as establishing new regu-
3 latory authority for any Federal agency.”.

4 (b) REPORT ON ACCREDITATION OF TSUNAMIREADY
5 PROGRAM.—Not later than 180 days after the date of en-
6 actment 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 6 (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, tribal,
23 and territorial governments, and academic institutions as
24 the Administrator considers appropriate, the coordinating

1 committee under section 5(d), and the panel under section
2 8(a), support or maintain”;

3 (2) in subsection (a), as designated by para-
4 graph (1), by striking “and assessment for tsunami
5 tracking and numerical forecast modeling. Such re-
6 search program shall—” and inserting the following:
7 “assessment for tsunami tracking and numerical
8 forecast modeling, and standards development.

9 “(b) RESPONSIBILITIES.—The research program
10 supported or maintained pursuant to subsection (a)
11 shall—”; and

12 (3) in subsection (b), as designated by para-
13 graph (2)—

14 (A) by amending paragraph (1) to read as
15 follows:

16 “(1) consider other appropriate and cost effec-
17 tive research to mitigate the impact of a tsunami,
18 including the improvement of near-field and distant
19 tsunami detection and forecasting capabilities, which
20 may include use of a new generation of the Deep-
21 Ocean Assessment and Reporting of Tsunamis array
22 and other real-time tsunami monitoring systems and
23 supercomputer capacity of the Administration to de-
24 velop a rapid tsunami forecast for all United States
25 coastlines;”;

1 (B) in paragraph (3)—

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

4 (ii) by striking “and” at the end;

5 (C) by redesignating paragraph (4) as
6 paragraph (5);

7 (D) by inserting after paragraph (3) the
8 following:

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

12 (E) in paragraph (5), as redesignated by
13 subparagraph (C), by striking “to the scientific
14 community” and inserting “to the public”.

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

17 Section 7 (33 U.S.C. 3206) is amended—

18 (1) by amending subsection (a) to read as fol-
19 lows:

20 “(a) SUPPORT FOR DEVELOPMENT OF AN INTER-
21 NATIONAL TSUNAMI WARNING SYSTEM.—The Adminis-
22 trator shall, in coordination with the Secretary of State
23 and in consultation with such other agencies as the Ad-
24 ministrator considers relevant, provide technical assistance
25 and training to the Intergovernmental Oceanographic

1 Commission of the United Nations Educational, Scientific,
2 and Cultural Organization, the World Meteorological Or-
3 ganization of the United Nations, and such other inter-
4 national entities as the Administrator considers appro-
5 priate, as part of the international efforts to develop a
6 fully functional global tsunami forecast and warning sys-
7 tem comprised of regional tsunami warning networks.”;

8 (2) in subsection (b), by striking “shall” and
9 inserting “may”; and

10 (3) in subsection (c)—

11 (A) in paragraph (1), by striking “estab-
12 lishing” and inserting “supporting”; and

13 (B) in paragraph (2)—

14 (i) by striking “establish” and insert-
15 ing “support”; and

16 (ii) by striking “establishing” and in-
17 serting “supporting”.

18 **SEC. 8. TSUNAMI SCIENCE AND TECHNOLOGY ADVISORY**

19 **PANEL.**

20 (a) **IN GENERAL.**—The Act is further amended—

21 (1) by redesignating section 8 (33 U.S.C. 3207)
22 as section 9; and

23 (2) by inserting after section 7 (33 U.S.C.
24 3206) the following:

1 **“SEC. 8. TSUNAMI SCIENCE AND TECHNOLOGY ADVISORY**
2 **PANEL.**

3 “(a) DESIGNATION.—The Administrator shall des-
4 ignate an existing working group within the Science Advi-
5 sory Board of the Administration to serve as the Tsunami
6 Science and Technology Advisory Panel to provide advice
7 to the Administrator on matters regarding tsunami
8 science, technology, and regional preparedness.

9 “(b) MEMBERSHIP.—

10 “(1) COMPOSITION.—The working group des-
11 igned under subsection (a) shall be composed of no
12 fewer than 7 members selected by the Administrator
13 from among individuals from academia or State
14 agencies who have academic or practical expertise in
15 physical sciences, social sciences, information tech-
16 nology, coastal resilience, emergency management,
17 or such other disciplines as the Administrator con-
18 siders appropriate.

19 “(2) FEDERAL EMPLOYMENT.—No member of
20 the working group designated pursuant to subsection
21 (a) may be a Federal employee.

22 “(c) RESPONSIBILITIES.—Not less frequently than
23 once every 4 years, the working group designated under
24 subsection (a) shall—

25 “(1) review the activities of the Administration,
26 and other Federal activities as appropriate, relating

1 to tsunami research, detection, forecasting, warning,
2 mitigation, resiliency, and preparation; and

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

5 “(A) the findings of the working group
6 with respect to the most recent review con-
7 ducted pursuant to paragraph (1); and

8 “(B) such recommendations for legislative
9 or administrative action as the working group
10 considers appropriate to improve Federal tsu-
11 nami research, detection, forecasting, warning,
12 mitigation, resiliency, and preparation.

13 “(d) REPORTS TO CONGRESS.—Not less frequently
14 than once every 4 years, the Administrator shall submit
15 to the Committee on Commerce, Science, and Transpor-
16 tation of the Senate, and the Committee on Science,
17 Space, and Technology of the House of Representatives
18 a report on the findings and recommendations received by
19 the Administrator under subsection (c)(2).”.

20 **SEC. 9. REPORTS.**

21 (a) REPORT ON IMPLEMENTATION OF TSUNAMI
22 WARNING AND EDUCATION ACT.—

23 (1) IN GENERAL.—Not later than 1 year after
24 the date of the enactment of this Act, the Adminis-
25 trator of the National Oceanic and Atmospheric Ad-

1 ministration shall submit to Congress a report on
2 the implementation of the Tsunami Warning and
3 Education Act (33 U.S.C. 3201 et seq.).

4 (2) ELEMENTS.—The report required by para-
5 graph (1) shall include the following:

6 (A) A detailed description of the progress
7 made in implementing sections 4(d)(6), 5(b)(6),
8 and 6(b)(4) of the Tsunami Warning and Edu-
9 cation Act.

10 (B) A description of the ways that tsunami
11 warnings and warning products issued by the
12 Tsunami Forecasting and Warning Program es-
13 tablished under section 4 of the Tsunami Warn-
14 ing and Education Act (33 U.S.C. 3203) can be
15 standardized and streamlined with warnings
16 and warning products for hurricanes, coastal
17 storms, and other coastal flooding events.

18 (b) REPORT ON NATIONAL EFFORTS THAT SUPPORT
19 RAPID RESPONSE FOLLOWING NEAR-SHORE TSUNAMI
20 EVENTS.—

21 (1) IN GENERAL.—Not later than 1 year after
22 the date of the enactment of this Act, the Adminis-
23 trator and the Secretary of Homeland Security shall
24 jointly, in coordination with the Director of the
25 United States Geological Survey, Administrator of

1 the Federal Emergency Management Agency, the
2 Chief of the National Guard Bureau, and the heads
3 of such other Federal agencies as the Administrator
4 considers appropriate, submit to the appropriate
5 committees of Congress a report on the national ef-
6 forts in effect on the day before the date of the en-
7 actment of this Act that support and facilitate rapid
8 emergency response following a domestic near-shore
9 tsunami event to better understand domestic effects
10 of earthquake derived tsunami on people, infrastruc-
11 ture, and communities in the United States.

12 (2) ELEMENTS.—The report required by para-
13 graph (1) shall include the following:

14 (A) A description of scientific or other
15 measurements collected on the day before the
16 date of the enactment of this Act to quickly
17 identify and quantify lost or degraded infra-
18 structure or terrestrial formations.

19 (B) A description of scientific or other
20 measurements that would be necessary to col-
21 lect to quickly identify and quantify lost or de-
22 graded infrastructure or terrestrial formations.

23 (C) Identification and evaluation of Fed-
24 eral, State, local, tribal, territorial, and military
25 first responder and search and rescue operation

1 centers, bases, and other facilities as well as
2 other critical response assets and infrastruc-
3 ture, including search and rescue aircraft, lo-
4 cated within near-shore and distant tsunami in-
5 undation areas on the day before the date of
6 the enactment of this Act.

7 (D) An evaluation of near-shore tsunami
8 response plans in areas described in subpara-
9 graph (C) in effect on the day before the date
10 of the enactment of this Act, and how those re-
11 sponse plans would be affected by the loss of
12 search and rescue and first responder infra-
13 structure described in such subparagraph.

14 (E) A description of redevelopment plans
15 and reports in effect on the day before the date
16 of the enactment of this Act for communities in
17 areas that are at high-risk for near-shore tsu-
18 nami, as well as identification of States or com-
19 munities that do not have redevelopment plans.

20 (F) Recommendations to enhance near-
21 shore tsunami preparedness and response plans,
22 including recommended responder exercises,
23 predisaster planning, and mitigation needs.

1 (G) Such other data and analysis informa-
2 tion as the Administrator and the Secretary of
3 Homeland Security consider appropriate.

4 (3) APPROPRIATE COMMITTEES OF CON-
5 GRESS.—In this subsection, the term “appropriate
6 committees of Congress” means—

7 (A) the Committee on Commerce, Science,
8 and Transportation and the Committee on
9 Homeland Security and Governmental Affairs
10 of the Senate; and

11 (B) the Committee on Science, Space, and
12 Technology and the Committee on Homeland
13 Security of the House of Representatives.

14 **SEC. 10. AUTHORIZATION OF APPROPRIATIONS.**

15 Section 9 of the Act, as redesignated by section
16 8(a)(1) of this Act, is amended—

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

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

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

22 “(6) \$27,000,000 for each of fiscal years 2016
23 through 2021, of which—

24 “(A) not less than 27 percent of the
25 amount appropriated for each fiscal year shall

1 be for activities conducted at the State level
2 under the tsunami hazard mitigation program
3 under section 5; and

4 “(B) not less than 8 percent of the amount
5 appropriated shall be for the tsunami research
6 program under section 6.”.

7 **SEC. 11. OUTREACH RESPONSIBILITIES.**

8 The Administrator of the National Oceanic and At-
9 mospheric Administration, in coordination with State and
10 local emergency managers, shall develop and carry out for-
11 mal outreach activities to improve tsunami education and
12 awareness and foster the development of resilient commu-
13 nities. Outreach activities may include—

14 (1) the development of outreach plans to ensure
15 the close integration of tsunami warning centers
16 supported or maintained pursuant to section 4(d) of
17 the Tsunami Warning and Education Act (33
18 U.S.C. 3203(d)) with local Weather Forecast Offices
19 of the National Weather Service and emergency
20 managers;

21 (2) working with appropriate local Weather
22 Forecast Offices to ensure they have the technical
23 knowledge and capability to disseminate tsunami
24 warnings to the communities they serve; and

1 (3) evaluating the effectiveness of warnings and
2 of coordination with local Weather Forecast Offices
3 after significant tsunami events.

4 **SEC. 12. REPEAL OF DUPLICATE PROVISIONS OF LAW.**

5 (a) REPEAL.—The Magnuson-Stevens Fishery Con-
6 servation and Management Reauthorization Act of 2006
7 (Public Law 109–479) is amended by striking title VIII
8 (relating to tsunami warning and education).

9 (b) CONSTRUCTION.—Nothing in this section shall be
10 construed to repeal, or affect in any way, Public Law 109–
11 424.

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