

115TH CONGRESS
1ST SESSION

H. R. 312

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 HOUSE OF REPRESENTATIVES

JANUARY 5, 2017

Ms. BONAMICI (for herself, Mr. ROHRABACHER, Ms. BEUTLER, Mr. YOUNG of Alaska, Mr. CRIST, Ms. EDDIE BERNICE JOHNSON of Texas, Mr. ISSA, Mr. DEFazio, and Ms. JAYAPAL) introduced the following bill; which was referred to the Committee on Science, Space, and Technology

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 2017”.

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 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 redesignated, by strik-
20 ing “, including the Indian Ocean; and” and insert-
21 ing a semicolon; and

22 (8) by inserting after paragraph (6), as redesi-
23 gnated, 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(a)) 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 section 4 (33
9 U.S.C. 3203(b)) 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 (8) through (10), 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) by amending paragraph (5), as redesignated
23 by paragraph (3), to read as follows:

24 “(5) provide tsunami forecasting capability
25 based on models and measurements, including tsu-
26 nami inundation models and maps for use in in-

1 creasing the preparedness of communities and safe-
2 guarding port and harbor operations, that incor-
3 porate inputs, including—

4 “(A) the United States and global ocean
5 and coastal observing system;

6 “(B) the global Earth observing system;

7 “(C) the global seismic network;

8 “(D) the Advanced National Seismic sys-
9 tem;

10 “(E) tsunami model validation using his-
11 torical and paleotsunami data;

12 “(F) digital elevation models and bathym-
13 etry; and

14 “(G) newly developing tsunami detection
15 methodologies using satellites and airborne re-
16 mote sensing;”;

17 (6) by amending paragraph (7), as redesignated
18 by paragraph (3), to read as follows:

19 “(7) include a cooperative effort among the Ad-
20 ministration, the United States Geological Survey,
21 and the National Science Foundation under which
22 the Director of the United States Geological Survey
23 and the Director of the National Science Foundation
24 shall—

1 “(A) provide rapid and reliable seismic in-
2 formation to the Administrator from inter-
3 national and domestic seismic networks; and

4 “(B) support seismic stations installed be-
5 fore the date of the enactment of the Tsunami
6 Warning, Education, and Research Act of 2017
7 to supplement coverage in areas of sparse in-
8 strumentation;”;

9 (7) in paragraph (8), as redesignated by para-
10 graph (2)—

11 (A) by inserting “, including graphical
12 warning products,” after “warnings”;

13 (B) by inserting “, territories,” after
14 “States”; and

15 (C) by inserting “and Wireless Emergency
16 Alerts” after “Hazards Program”; and

17 (8) in paragraph (9), as redesignated by para-
18 graph (2)—

19 (A) by inserting “provide and” before
20 “allow”; and

21 (B) by inserting “and commercial and
22 Federal undersea communications cables” after
23 “observing technologies”.

1 (c) TSUNAMI WARNING SYSTEM.—Subsection (c) of
2 section 4 (33 U.S.C. 3203(c)) is amended to read as fol-
3 lows:

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

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

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

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

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

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

1 (d) TSUNAMI WARNING CENTERS.—Subsection (d)
2 of section 4 (33 U.S.C. 3203(d)) is amended to read as
3 follows:

4 “(d) TSUNAMI WARNING CENTERS.—

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

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

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

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

21 “(2) RESPONSIBILITIES.—The responsibilities
22 of the centers supported or maintained under para-
23 graph (1) shall include the following:

24 “(A) Continuously monitoring data from
25 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 tsu-
8 nami 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) Disseminating forecasts and tsunami
21 warning bulletins to Federal, State, tribal, and
22 local government officials and the public.

23 “(G) Coordinating with the tsunami haz-
24 ard mitigation program conducted under section
25 5 to ensure ongoing sharing of information be-

1 tween forecasters and emergency management
2 officials.

3 “(H) In coordination with the Coast
4 Guard, evaluating and recommending proce-
5 dures for ports and harbors at risk of tsunami
6 inundation, including review of readiness, re-
7 sponse, and communication strategies, and data
8 sharing policies, to the maximum extent prac-
9 ticable.

10 “(I) Making data gathered under this Act
11 and post-warning analyses conducted by the
12 National Weather Service or other relevant Ad-
13 ministration offices available to the public.

14 “(J) Integrating and modernizing the pro-
15 gram operated under this section with advances
16 in tsunami science to improve performance
17 without compromising service.

18 “(3) FAIL-SAFE WARNING CAPABILITY.—The
19 tsunami warning centers supported or maintained
20 under paragraph (1) shall maintain a fail-safe warn-
21 ing capability and perform back-up duties for each
22 other.

23 “(4) COORDINATION WITH NATIONAL WEATHER
24 SERVICE.—The Administrator shall coordinate with
25 the forecast offices of the National Weather Service,

1 the centers supported or maintained under para-
2 graph (1), and such program offices of the Adminis-
3 tration as the Administrator or the coordinating
4 committee, as established in section 5(d), consider
5 appropriate to ensure that regional and local fore-
6 cast offices—

7 “(A) have the technical knowledge and ca-
8 pability to disseminate tsunami warnings for
9 the communities they serve;

10 “(B) leverage connections with local emer-
11 gency management officials for optimally dis-
12 seminating tsunami warnings and forecasts;
13 and

14 “(C) implement mass communication tools
15 in effect on the day before the date of the en-
16 actment of the Tsunami Warning, Education,
17 and Research Act of 2017 used by the National
18 Weather Service on such date and newer mass
19 communication technologies as they are devel-
20 oped as a part of the Weather-Ready Nation
21 program of the Administration, or otherwise,
22 for the purpose of timely and effective delivery
23 of tsunami warnings.

24 “(5) UNIFORM OPERATING PROCEDURES.—The
25 Administrator shall—

1 “(A) develop uniform operational proce-
2 dures for the centers supported or maintained
3 under paragraph (1), including the use of soft-
4 ware applications, checklists, decision support
5 tools, and tsunami warning products that have
6 been standardized across the program sup-
7 ported under this section;

8 “(B) ensure that processes and products of
9 the warning system operated under subsection
10 (c)—

11 “(i) reflect industry best practices
12 when practicable;

13 “(ii) conform to the maximum extent
14 practicable with internationally recognized
15 standards for information technology; and

16 “(iii) conform to the maximum extent
17 practicable with other warning products
18 and practices of the National Weather
19 Service;

20 “(C) ensure that future adjustments to
21 operational protocols, processes, and warning
22 products—

23 “(i) are made consistently across the
24 warning system operated under subsection
25 (c); and

1 “(ii) are applied in a uniform manner
2 across such warning system;

3 “(D) establish a systematic method for in-
4 formation technology product development to
5 improve long-term technology planning efforts;
6 and

7 “(E) disseminate guidelines and metrics
8 for evaluating and improving tsunami forecast
9 models.

10 “(6) AVAILABLE RESOURCES.—The Adminis-
11 trator, through the National Weather Service, shall
12 ensure that resources are available to fulfill the obli-
13 gations of this Act. This includes ensuring super-
14 computing resources are available to run, as rapidly
15 as possible, such computer models as are needed for
16 purposes of the tsunami warning system operated
17 under subsection (c).”.

18 (e) TRANSFER OF TECHNOLOGY; MAINTENANCE AND
19 UPGRADES.—Subsection (e) of section 4 (33 U.S.C.
20 3203(e)) is amended to read as follows:

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

24 “(1) develop requirements for the equipment
25 used to forecast tsunami, 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 requirements for the integration of equipment
7 with other United States and global ocean and
8 coastal observation systems, the global Earth
9 observing system of systems, the global seismic
10 networks, and the Advanced National Seismic
11 System;

12 “(2) develop and execute a plan for the transfer
13 of technology from ongoing research conducted as
14 part of the program supported or maintained under
15 section 6 into the program under this section; and

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

19 (f) FEDERAL COOPERATION.—Subsection (f) of sec-
20 tion 4 (33 U.S.C. 3203(f)) is amended to read as follows:

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

24 “(1) identify which assets of other Federal
25 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 in
6 support of the tsunami forecast and warning
7 program.”.

8 (g) UNNECESSARY PROVISIONS.—Section 4 (33
9 U.S.C. 3203) is further amended—

10 (1) by striking subsection (g);

11 (2) by striking subsections (i) through (k); and

12 (3) by redesignating subsection (h) as sub-
13 section (g).

14 (h) CONGRESSIONAL NOTIFICATIONS.—Subsection
15 (g) of section 4 (33 U.S.C. 3203(g)), as redesignated by
16 subsection (g)(3), is amended—

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

20 (2) in the matter before subparagraph (A), as
21 redesignated by paragraph (2), by striking “The Ad-
22 ministrator” and inserting the following:

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

24 (3) in paragraph (1), as redesignated by para-
25 graph (3)—

1 (A) in subparagraph (A), as redesignated
2 by paragraph (2), by striking “and” at the end;

3 (B) in subparagraph (B), as redesignated
4 by paragraph (2), by striking the period at the
5 end and inserting “; and”; and

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

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

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

10 “(2) CONTENTS.—In a case in which notice is
11 submitted under paragraph (1) within 30 days of a
12 significant tsunami warning described in subpara-
13 graph (C) of such paragraph, such notice shall in-
14 clude, as appropriate, brief information and analysis
15 of—

16 “(A) the accuracy of the tsunami model
17 used;

18 “(B) the specific deep ocean or other moni-
19 toring equipment that detected the incident, as
20 well as the deep ocean or other monitoring
21 equipment that did not detect the incident due
22 to malfunction or other reasons;

23 “(C) the effectiveness of the warning com-
24 munication, including the dissemination of
25 warnings with State, territory, local, and tribal

1 partners in the affected area under the jurisdic-
2 tion of the National Weather Service; and

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

5 **SEC. 5. MODIFICATION OF NATIONAL TSUNAMI HAZARD**
6 **MITIGATION PROGRAM.**

7 (a) IN GENERAL.—Section 5(a) (33 U.S.C. 3204(a))
8 is amended to read as follows:

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

17 (b) NATIONAL TSUNAMI HAZARD MITIGATION PRO-
18 GRAM.—Section 5 (33 U.S.C. 3204) is amended by strik-
19 ing subsections (c) and (d) and inserting the following:

20 “(c) PROGRAM COMPONENTS.—The Program con-
21 ducted under subsection (a) shall include the following:

22 “(1) Technical and financial assistance to
23 coastal States, territories, tribes, and local govern-
24 ments to develop and implement activities under this
25 section.

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

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

15 “(4) Activities to support the development of
16 regional tsunami hazard and risk assessments. Such
17 regional risk assessments may include the following:

18 “(A) The sources, sizes, and other relevant
19 historical data of tsunami in the region, includ-
20 ing paleotsunami data.

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

24 “(C) Maps of evacuation areas and evacu-
25 ation routes, including, when appropriate, traf-

1 fic studies that evaluate the viability of 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 “(E) Evaluations and technical assistance
7 for vertical evacuation structure planning for
8 communities where models indicate limited or
9 no ability for timely evacuation, especially in
10 areas at risk of near shore generated tsunami.

11 “(F) Evaluation of at-risk ports and har-
12 bors.

13 “(G) Evaluation of the effect of tsunami
14 currents on the foundations of closely spaced,
15 coastal high-rise structures.

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

18 “(A) Evaluation and recommendation of
19 procedures for ports and harbors in the event of
20 a distant or near-field tsunami.

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

24 “(6) Activities to support the development of
25 community-based outreach and education programs

1 to ensure community readiness and resilience, in-
2 cluding the following:

3 “(A) The development, implementation,
4 and assessment of technical training and public
5 education programs, including education pro-
6 grams that address unique characteristics of
7 distant and near-field tsunami.

8 “(B) The development of decision support
9 tools.

10 “(C) The incorporation of social science re-
11 search into community readiness and resilience
12 efforts.

13 “(D) The development of evidence-based
14 education guidelines.

15 “(7) Dissemination of guidelines and standards
16 for community planning, education, and training
17 products, programs, and tools, including—

18 “(A) standards for—

19 “(i) mapping products;

20 “(ii) inundation models; and

21 “(iii) effective emergency exercises;

22 and

23 “(B) recommended guidance for at-risk
24 port and harbor tsunami warning, evacuation,

1 and response procedures in coordination with
2 the Coast Guard.

3 “(d) AUTHORIZED ACTIVITIES.—In addition to ac-
4 tivities conducted under subsection (c), the program con-
5 ducted under subsection (a) may include the following:

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

10 “(2) Risk management training for local offi-
11 cials and community organizations to enhance un-
12 derstanding and preparedness.

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

16 “(4) Development of practical applications for
17 existing or emerging technologies, such as modeling,
18 remote sensing, geospatial technology, engineering,
19 and observing systems, including the integration of
20 tsunami sensors into Federal and commercial sub-
21 marine telecommunication cables if practicable.

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

24 “(A) access to data and products derived
25 from observing and detection systems; and

1 “(B) development and maintenance of new
2 integrated data products to support risk man-
3 agement, risk assessment, and resilience pro-
4 grams.

5 “(6) Risk notification systems that coordinate
6 with and build upon existing systems and actively
7 engage decisionmakers, State, local, tribal, and terri-
8 torial governments and agencies, business commu-
9 nities, nongovernmental organizations, and the
10 media.

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

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

20 “(c) REPORT ON ACCREDITATION OF TSUNAMIREADY
21 PROGRAM.—Not later than 180 days after the date of en-
22 actment of this Act, the Administrator of the National
23 Oceanic and Atmospheric Administration shall submit to
24 the Committee on Commerce, Science, and Transportation
25 of the Senate and the Committee on Science, Space, and

1 Technology of the House of Representatives a report on
2 which authorities and activities would be needed to have
3 the TsunamiReady program of the National Weather
4 Service accredited by the Emergency Management Accred-
5 itation Program.

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

7 Section 6 (33 U.S.C. 3205) is amended—

8 (1) in the matter before paragraph (1), by
9 striking “The Administrator shall” and all that fol-
10 lows through “establish or maintain” and inserting
11 the following:

12 “(a) IN GENERAL.—The Administrator shall, in con-
13 sultation with such other Federal agencies, State, tribal,
14 and territorial governments, and academic institutions as
15 the Administrator considers appropriate, the coordinating
16 committee under section 5(d), and the panel under section
17 8(a), support or maintain”;

18 (2) in subsection (a), as designated by para-
19 graph (1), by striking “and assessment for tsunami
20 tracking and numerical forecast modeling. Such re-
21 search program shall—” and inserting the following:
22 “assessment for tsunami tracking and numerical
23 forecast modeling, and standards development.

1 “(b) RESPONSIBILITIES.—The research program
2 supported or maintained under subsection (a) shall—”;
3 and

4 (3) in subsection (b), as designated by para-
5 graph (2)—

6 (A) by amending paragraph (1) to read as
7 follows:

8 “(1) consider other appropriate and cost effec-
9 tive solutions to mitigate the impact of tsunami, in-
10 cluding the improvement of near-field and distant
11 tsunami detection and forecasting capabilities, which
12 may include use of a new generation of the Deep-
13 ocean Assessment and Reporting of Tsunamis array,
14 integration of tsunami sensors into commercial and
15 Federal telecommunications cables, and other real-
16 time tsunami monitoring systems and supercomputer
17 capacity of the Administration to develop a rapid
18 tsunami forecast for all United States coastlines;”;

19 (B) in paragraph (3)—

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

22 (ii) by striking “and” at the end;

23 (C) by redesignating paragraph (4) as
24 paragraph (5);

1 (D) by inserting after paragraph (3) the
2 following:

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

6 (E) in paragraph (5), as redesignated by
7 subparagraph (C), by striking “to the scientific
8 community” and inserting “to the public and
9 the scientific community”.

10 **SEC. 7. GLOBAL TSUNAMI WARNING AND MITIGATION NET-**
11 **WORK.**

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

13 (1) by amending subsection (a) to read as fol-
14 lows:

15 “(a) SUPPORT FOR DEVELOPMENT OF AN INTER-
16 NATIONAL TSUNAMI WARNING SYSTEM.—The Adminis-
17 trator shall, in coordination with the Secretary of State
18 and in consultation with such other agencies as the Ad-
19 ministrator considers relevant, provide technical assist-
20 ance, operational support, and training to the Intergovern-
21 mental Oceanographic Commission of the United Nations
22 Educational, Scientific, and Cultural Organization, the
23 World Meteorological Organization of the United Nations,
24 and such other international entities as the Administrator
25 considers appropriate, as part of the international efforts

1 to develop a fully functional global tsunami forecast and
 2 warning system comprised of regional tsunami warning
 3 networks.”;

4 (2) in subsection (b), by striking “shall” each
 5 place it appears and inserting “may”; and

6 (3) in subsection (c)—

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

9 (B) in paragraph (2)—

10 (i) by striking “establish” and insert-
 11 ing “support”; and

12 (ii) by striking “establishing” and in-
 13 serting “supporting”.

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

15 **PANEL.**

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

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

19 (2) by inserting after section 7 (33 U.S.C.
 20 3206) the following:

21 **“SEC. 8. TSUNAMI SCIENCE AND TECHNOLOGY ADVISORY**

22 **PANEL.**

23 “(a) DESIGNATION.—The Administrator shall des-
 24 ignate an existing working group within the Science Advi-
 25 sory Board of the Administration to serve as the Tsunami

1 Science and Technology Advisory Panel to provide advice
2 to the Administrator on matters regarding tsunami
3 science, technology, and regional preparedness.

4 “(b) MEMBERSHIP.—

5 “(1) COMPOSITION.—The Panel shall be com-
6 posed of no fewer than 7 members selected by the
7 Administrator from among individuals from aca-
8 demia or State agencies who have academic or prac-
9 tical expertise in physical sciences, social sciences,
10 information technology, coastal resilience, emergency
11 management, or such other disciplines as the Ad-
12 ministrator considers appropriate.

13 “(2) FEDERAL EMPLOYMENT.—No member of
14 the Panel may be a Federal employee.

15 “(c) RESPONSIBILITIES.—Not less frequently than
16 once every 4 years, the Panel shall—

17 “(1) review the activities of the Administration,
18 and other Federal activities as appropriate, relating
19 to tsunami research, detection, forecasting, warning,
20 mitigation, resiliency, and preparation; and

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

23 “(A) the findings of the working group
24 with respect to the most recent review con-
25 ducted under paragraph (1); and

1 “(B) such recommendations for legislative
2 or administrative action as the working group
3 considers appropriate to improve Federal tsu-
4 nami research, detection, forecasting, warning,
5 mitigation, resiliency, and preparation.

6 “(d) REPORTS TO CONGRESS.—Not less frequently
7 than once every 4 years, the Administrator shall submit
8 to the Committee on Commerce, Science, and Transpor-
9 tation of the Senate, and the Committee on Science,
10 Space, and Technology of the House of Representatives
11 a report on the findings and recommendations received by
12 the Administrator under subsection (c)(2).”.

13 **SEC. 9. REPORTS.**

14 (a) REPORT ON IMPLEMENTATION OF TSUNAMI
15 WARNING AND EDUCATION ACT.—

16 (1) IN GENERAL.—Not later than 1 year after
17 the date of the enactment of this Act, the Adminis-
18 trator of the National Oceanic and Atmospheric Ad-
19 ministration shall submit to Congress a report on
20 the implementation of the Tsunami Warning and
21 Education Act (33 U.S.C. 3201 et seq.).

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

24 (A) A detailed description of the progress
25 made in implementing sections 4(d)(6), 5(b)(6),

1 and 6(b)(4) of the Tsunami Warning and Edu-
2 cation Act.

3 (B) A description of the ways that tsunami
4 warnings and warning products issued by the
5 Tsunami Forecasting and Warning Program es-
6 tablished under section 4 of the Tsunami Warn-
7 ing and Education Act (33 U.S.C. 3203) can be
8 standardized and streamlined with warnings
9 and warning products for hurricanes, coastal
10 storms, and other coastal flooding events.

11 (b) REPORT ON NATIONAL EFFORTS THAT SUPPORT
12 RAPID RESPONSE FOLLOWING NEAR-SHORE TSUNAMI
13 EVENTS.—

14 (1) IN GENERAL.—Not later than 1 year after
15 the date of the enactment of this Act, the Adminis-
16 trator and the Secretary of Homeland Security shall
17 jointly, in coordination with the Director of the
18 United States Geological Survey, Administrator of
19 the Federal Emergency Management Agency, the
20 Chief of the National Guard Bureau, and the heads
21 of such other Federal agencies as the Administrator
22 considers appropriate, submit to the appropriate
23 committees of Congress a report on the national ef-
24 forts in effect on the day before the date of the en-
25 actment of this Act that support and facilitate rapid

1 emergency response following a domestic near-shore
2 tsunami event to better understand domestic effects
3 of earthquake derived tsunami on people, infrastruc-
4 ture, and communities in the United States.

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

7 (A) A description of scientific or other
8 measurements collected on the day before the
9 date of the enactment of this Act to quickly
10 identify and quantify lost or degraded infra-
11 structure or terrestrial formations.

12 (B) A description of scientific or other
13 measurements that would be necessary to col-
14 lect to quickly identify and quantify lost or de-
15 graded infrastructure or terrestrial formations.

16 (C) Identification and evaluation of Fed-
17 eral, State, local, tribal, territorial, and military
18 first responder and search and rescue operation
19 centers, bases, and other facilities as well as
20 other critical response assets and infrastruc-
21 ture, including search and rescue aircraft, lo-
22 cated within near-shore and distant tsunami in-
23 undation areas on the day before the date of
24 the enactment of this Act.

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

8 (E) A description of redevelopment plans
9 and reports in effect on the day before the date
10 of the enactment of this Act for communities in
11 areas that are at high risk for near-shore tsu-
12 nami, as well identification of States or commu-
13 nities that do not have redevelopment plans.

14 (F) Recommendations to enhance near-
15 shore tsunami preparedness and response plans,
16 including recommended responder exercises,
17 predisaster planning, and mitigation needs.

18 (G) Such other data and analysis informa-
19 tion as the Administrator and the Secretary of
20 Homeland Security consider appropriate.

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

24 (A) the Committee on Commerce, Science,
25 and Transportation and the Committee on

1 Homeland Security and Governmental Affairs
2 of the Senate; and

3 (B) the Committee on Science, Space, and
4 Technology and the Committee on Homeland
5 Security of the House of Representatives.

6 **SEC. 10. AUTHORIZATION OF APPROPRIATIONS.**

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

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

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

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

14 “(6) \$31,700,000 for each of fiscal years 2017
15 through 2021, of which—

16 “(A) not less than 27 percent of the
17 amount appropriated for each fiscal year shall
18 be for activities conducted at the State level
19 under the tsunami hazard mitigation program
20 under section 5; and

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

1 **SEC. 11. OUTREACH RESPONSIBILITIES.**

2 The Administrator of the National Oceanic and At-
3 mospheric Administration, in coordination with State and
4 local emergency managers, shall develop and carry out for-
5 mal outreach activities to improve tsunami education and
6 awareness and foster the development of resilient commu-
7 nities. Outreach activities may include—

8 (1) the development of outreach plans to ensure
9 the close integration of tsunami warning centers
10 supported or maintained under section 4(d) of the
11 Tsunami Warning and Education Act (33 U.S.C.
12 3203(d)) with local Weather Forecast Offices of the
13 National Weather Service and emergency managers;

14 (2) working with appropriate local Weather
15 Forecast Offices to ensure they have the technical
16 knowledge and capability to disseminate tsunami
17 warnings to the communities they serve; and

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

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

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

1 (b) CONSTRUCTION.—Nothing in this section shall be
2 construed to repeal, or affect in any way, Public Law 109–
3 424.

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