

AMENDMENT NO. _____

Calendar No. _____

Purpose: 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—114th Cong., 2d Sess.

H. R. 1561

To improve the National Oceanic and Atmospheric Administration's weather research through a focused program of investment on affordable and attainable advances in observational, computing, and modeling capabilities to support substantial improvement in weather forecasting and prediction of high impact weather events, to expand commercial opportunities for the provision of weather data, and for other purposes.

Referred to the Committee on _____ and ordered to be printed

Ordered to lie on the table and to be printed

AMENDMENT intended to be proposed by Ms. Cantwell to the amendment (No. ANS to HR 1561) proposed by Mr. Thune

Viz:

- 1 At the appropriate place, insert the following:

1 **TITLE ____—TSUNAMI WARNING,**
2 **EDUCATION, AND RESEARCH**
3 **ACT OF 2016**

4 **SEC. __01. SHORT TITLE.**

5 This title may be cited as the “Tsunami Warning,
6 Education, and Research Act of 2016”.

7 **SEC. __02. REFERENCES TO THE TSUNAMI WARNING AND**
8 **EDUCATION ACT.**

9 Except as otherwise expressly provided, whenever in
10 this title an amendment or repeal is expressed in terms
11 of an amendment to, or repeal of, a section or other provi-
12 sion, the reference shall be considered to be made to a
13 section or other provision of the Tsunami Warning and
14 Education Act (Public Law 109–424; 33 U.S.C. 3201 et
15 seq.).

16 **SEC. __03. EXPANSION OF PURPOSES OF TSUNAMI WARN-**
17 **ING AND EDUCATION ACT.**

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

19 (1) in paragraph (1), by inserting “research,”
20 after “warnings,”;

21 (2) by amending paragraph (2) to read as fol-
22 lows:

23 “(2) to enhance and modernize the existing
24 United States Tsunami Warning System to increase
25 the accuracy of forecasts and warnings, to ensure

1 full coverage of tsunami threats to the United States
2 with a network of detection assets, and to reduce
3 false alarms;”;

4 (3) by amending paragraph (3) to read as fol-
5 lows:

6 “(3) to improve and develop standards and
7 guidelines for mapping, modeling, and assessment
8 efforts to improve tsunami detection, forecasting,
9 warnings, notification, mitigation, resiliency, re-
10 sponse, outreach, and recovery;”;

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

13 (5) by inserting after paragraph (3) the fol-
14 lowing:

15 “(4) to improve research efforts related to im-
16 proving tsunami detection, forecasting, warnings, no-
17 tification, mitigation, resiliency, response, outreach,
18 and recovery;”;

19 (6) in paragraph (5), as redesignated—

20 (A) by striking “and increase” and insert-
21 ing “, increase, and develop uniform standards
22 and guidelines for”; and

23 (B) by inserting “, including the warning
24 signs of locally generated tsunami” after “ap-
25 proaching”;

1 “(2) to the degree practicable, maintain not less
2 than 80 percent of the Deep-ocean Assessment and
3 Reporting of Tsunamis buoy array at operational ca-
4 pacity to optimize data reliability;”.

5 (5) by amending paragraph (5), as redesignated
6 by paragraph (3), to read as follows:

7 “(5) provide tsunami forecasting capability
8 based on models and measurements, including tsu-
9 nami inundation models and maps for use in in-
10 creasing the preparedness of communities and safe-
11 guarding port and harbor operations, that incor-
12 porate inputs, including—

13 “(A) the United States and global ocean
14 and coastal observing system;

15 “(B) the global Earth observing system;

16 “(C) the global seismic network;

17 “(D) the Advanced National Seismic sys-
18 tem;

19 “(E) tsunami model validation using his-
20 torical and paleotsunami data;

21 “(F) digital elevation models and bathym-
22 etry; and

23 “(G) newly developing tsunami detection
24 methodologies using satellites and airborne re-
25 mote sensing;”;

1 (6) by amending paragraph (7), as redesignated
2 by paragraph (3), to read as follows:

3 “(7) include a cooperative effort among the Ad-
4 ministration, the United States Geological Survey,
5 and the National Science Foundation under which
6 the Director of the United States Geological Survey
7 and the Director of the National Science Foundation
8 shall—

9 “(A) provide rapid and reliable seismic in-
10 formation to the Administrator from inter-
11 national and domestic seismic networks; and

12 “(B) support seismic stations installed be-
13 fore the date of the enactment of the Tsunami
14 Warning, Education, and Research Act of 2016
15 to supplement coverage in areas of sparse in-
16 strumentation;”;

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

19 (A) by inserting “, including graphical
20 warning products,” after “warnings”;

21 (B) by inserting “, territories,” after
22 “States”; and

23 (C) by inserting “and Wireless Emergency
24 Alerts” after “Hazards Program”; and

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

3 (A) by inserting “provide and” before
4 “allow”; and

5 (B) by inserting “and commercial and
6 Federal undersea communications cables” after
7 “observing technologies”.

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

11 “(c) TSUNAMI WARNING SYSTEM.—The program
12 under this section shall operate a tsunami warning system
13 that—

14 “(1) is capable of forecasting tsunami, includ-
15 ing forecasting tsunami arrival time and inundation
16 estimates, anywhere in the Pacific and Arctic Ocean
17 regions and providing adequate warnings;

18 “(2) is capable of forecasting and providing
19 adequate warnings, including tsunami arrival time
20 and inundation models where applicable, in areas of
21 the Atlantic Ocean, including the 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 tsunami
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 (d) TSUNAMI WARNING CENTERS.—Subsection (d)
8 of section 4 (33 U.S.C. 3203(d)) is amended to read as
9 follows:

10 “(d) TSUNAMI WARNING CENTERS.—

11 “(1) IN GENERAL.—The Administrator shall
12 support or maintain centers to support the tsunami
13 warning system required by subsection (c). The Cen-
14 ters shall include—

15 “(A) the National Tsunami Warning Cen-
16 ter, located in Alaska, which is primarily re-
17 sponsible for Alaska and the continental United
18 States;

19 “(B) the Pacific Tsunami Warning Center,
20 located in Hawaii, which is primarily respon-
21 sible for Hawaii, the Caribbean, and other
22 areas of the Pacific not covered by the National
23 Center; and

1 “(C) any additional forecast and warning
2 centers determined by the National Weather
3 Service to be necessary.

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

7 “(A) Continuously monitoring data from
8 seismological, deep ocean, coastal sea level, and
9 tidal monitoring stations and other data sources
10 as may be developed and deployed.

11 “(B) Evaluating earthquakes, landslides,
12 and volcanic eruptions that have the potential
13 to generate tsunami.

14 “(C) Evaluating deep ocean buoy data and
15 tidal monitoring stations for indications of tsu-
16 nami resulting from earthquakes and other
17 sources.

18 “(D) To the extent practicable, utilizing a
19 range of models, including ensemble models, to
20 predict tsunami, including arrival times, flood-
21 ing estimates, coastal and harbor currents, and
22 duration.

23 “(E) Using data from the Integrated
24 Ocean Observing System of the Administration
25 in coordination with regional associations to cal-

1 culate new inundation estimates and periodi-
2 cally update existing inundation estimates.

3 “(F) Disseminating forecasts and tsunami
4 warning bulletins to Federal, State, tribal, and
5 local government officials and the public.

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

11 “(H) In coordination with the Coast
12 Guard, evaluating and recommending proce-
13 dures for ports and harbors at risk of tsunami
14 inundation, including review of readiness, re-
15 sponse, and communication strategies, and data
16 sharing policies, to the maximum extent prac-
17 ticable.

18 “(I) Making data gathered under this Act
19 and post-warning analyses conducted by the
20 National Weather Service or other relevant Ad-
21 ministration offices available to the public.

22 “(J) Integrating and modernizing the pro-
23 gram operated under this section with advances
24 in tsunami science to improve performance
25 without compromising service.

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

6 “(4) COORDINATION WITH NATIONAL WEATHER
7 SERVICE.—The Administrator shall coordinate with
8 the forecast offices of the National Weather Service,
9 the centers supported or maintained under para-
10 graph (1), and such program offices of the Adminis-
11 tration as the Administrator or the coordinating
12 committee, as established in section 5(d), consider
13 appropriate to ensure that regional and local fore-
14 cast offices—

15 “(A) have the technical knowledge and ca-
16 pability to disseminate tsunami warnings for
17 the communities they serve;

18 “(B) leverage connections with local emer-
19 gency management officials for optimally dis-
20 seminating tsunami warnings and forecasts;
21 and

22 “(C) implement mass communication tools
23 in effect on the day before the date of the en-
24 actment of the Tsunami Warning, Education,
25 and Research Act of 2016 used by the National

1 Weather Service on such date and newer mass
2 communication technologies as they are devel-
3 oped as a part of the Weather-Ready Nation
4 program of the Administration, or otherwise,
5 for the purpose of timely and effective delivery
6 of tsunami warnings.

7 “(5) UNIFORM OPERATING PROCEDURES.—The
8 Administrator shall—

9 “(A) develop uniform operational proce-
10 dures for the centers supported or maintained
11 under paragraph (1), including the use of soft-
12 ware applications, checklists, decision support
13 tools, and tsunami warning products that have
14 been standardized across the program sup-
15 ported under this section;

16 “(B) ensure that processes and products of
17 the warning system operated under subsection
18 (c)—

19 “(i) reflect industry best practices
20 when practicable;

21 “(ii) conform to the maximum extent
22 practicable with internationally recognized
23 standards for information technology; and

24 “(iii) conform to the maximum extent
25 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 under subsection
8 (c); and

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

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

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

18 “(6) AVAILABLE RESOURCES.—The Adminis-
19 trator, through the National Weather Service, shall
20 ensure that resources are available to fulfill the obli-
21 gations of this Act. This includes ensuring super-
22 computing resources are available to run, as rapidly
23 as possible, such computer models as are needed for
24 purposes of the tsunami warning system operated
25 under subsection (c).”.

1 (e) TRANSFER OF TECHNOLOGY; MAINTENANCE AND
2 UPGRADES.—Subsection (e) of section 4 (33 U.S.C.
3 3203(e)) is amended 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 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 sec-
5 tion 4 (33 U.S.C. 3203(f)) 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 in
16 support of the tsunami forecast and warning
17 program.”.

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

20 (1) by striking subsection (g);

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

22 (3) by redesignating subsection (h) as sub-
23 section (g).

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

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

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

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

11 (3) in paragraph (1), as redesignated by para-
12 graph (3)—

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

15 (B) in subparagraph (B), as redesignated
16 by paragraph (2), by striking the period at the
17 end and inserting “; and”; and

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

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

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

22 “(2) CONTENTS.—In a case in which notice is
23 submitted under paragraph (1) within 30 days of a
24 significant tsunami warning described in subpara-
25 graph (C) of such paragraph, such notice shall in-

1 clude, as appropriate, brief information and analysis
2 of—

3 “(A) the accuracy of the tsunami model
4 used;

5 “(B) the specific deep ocean or other moni-
6 toring equipment that detected the incident, as
7 well as the deep ocean or other monitoring
8 equipment that did not detect the incident due
9 to malfunction or other reasons;

10 “(C) the effectiveness of the warning com-
11 munication, including the dissemination of
12 warnings with State, territory, local, and tribal
13 partners in the affected area under the jurisdic-
14 tion of the National Weather Service; and

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

17 **SEC. __05. MODIFICATION OF NATIONAL TSUNAMI HAZARD**
18 **MITIGATION PROGRAM.**

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

21 “(a) PROGRAM REQUIRED.—The Administrator, in
22 coordination with the Administrator of the Federal Emer-
23 gency Management Agency and the heads of such other
24 agencies as the Administrator considers relevant, shall
25 conduct a community-based tsunami hazard mitigation

1 program to improve tsunami preparedness and resiliency
2 of at-risk areas in the United States and the territories
3 of the United States.”

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

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

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

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

21 “(3) Activities to promote the adoption of tsu-
22 nami resilience, preparedness, warning, and mitiga-
23 tion measures by Federal, State, territorial, tribal,
24 and local governments and nongovernmental entities,

1 including educational and risk communication pro-
2 grams to discourage development in high-risk areas.

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

6 “(A) The sources, sizes, and other relevant
7 historical data of tsunami in the region, includ-
8 ing paleotsunami data.

9 “(B) Inundation models and maps of crit-
10 ical infrastructure and socioeconomic vulner-
11 ability in areas subject to tsunami inundation.

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

16 “(D) Evaluations of the size of populations
17 that will require evacuation, including popu-
18 lations with special evacuation needs.

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

24 “(F) Evaluation of at-risk ports and har-
25 bors.

1 “(G) Evaluation of the effect of tsunami
2 currents on the foundations of closely-spaced,
3 coastal high-rise structures.

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

6 “(A) Evaluation and recommendation of
7 procedures for ports and harbors in the event of
8 a distant or near-field tsunami.

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

12 “(6) Activities to support the development of
13 community-based outreach and education programs
14 to ensure community readiness and resilience, in-
15 cluding the following:

16 “(A) The development, implementation,
17 and assessment of technical training and public
18 education programs, including education pro-
19 grams that address unique characteristics of
20 distant and near-field tsunami.

21 “(B) The development of decision support
22 tools.

23 “(C) The incorporation of social science re-
24 search into community readiness and resilience
25 efforts.

1 “(D) The development of evidence-based
2 education guidelines.

3 “(7) Dissemination of guidelines and standards
4 for community planning, education, and training
5 products, programs, and tools, including—

6 “(A) standards for—

7 “(i) mapping products;

8 “(ii) inundation models; and

9 “(iii) effective emergency exercises;

10 and

11 “(B) recommended guidance for at-risk
12 port and harbor tsunami warning, evacuation,
13 and response procedures in coordination with
14 the Coast Guard.

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

18 “(1) Multidisciplinary vulnerability assessment
19 research, education, and training to help integrate
20 risk management and resilience objectives with com-
21 munity development planning and policies.

22 “(2) Risk management training for local offi-
23 cials and community organizations to enhance un-
24 derstanding and preparedness.

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

4 “(4) Development of practical applications for
5 existing or emerging technologies, such as modeling,
6 remote sensing, geospatial technology, engineering,
7 and observing systems, including the integration of
8 tsunami sensors into Federal and commercial sub-
9 marine telecommunication cables if practicable.

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

12 “(A) access to data and products derived
13 from observing and detection systems; and

14 “(B) development and maintenance of new
15 integrated data products to support risk man-
16 agement, risk assessment, and resilience pro-
17 grams.

18 “(6) Risk notification systems that coordinate
19 with and build upon existing systems and actively
20 engage decisionmakers, State, local, tribal, and terri-
21 torial governments and agencies, business commu-
22 nities, nongovernmental organizations, and the
23 media.

24 “(e) NO PREEMPTION WITH RESPECT TO DESIGNA-
25 TION OF AT-RISK AREAS.—The establishment of national

1 standards for inundation models under this section shall
2 not prevent States, territories, tribes, and local govern-
3 ments from designating additional areas as being at risk
4 based on knowledge of local conditions.

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

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

19 **SEC. _06. MODIFICATION OF TSUNAMI RESEARCH PRO-**
20 **GRAM.**

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

22 (1) in the matter before paragraph (1), by
23 striking “The Administrator shall” and all that fol-
24 lows through “establish or maintain” and inserting
25 the following:

1 “(a) IN GENERAL.—The Administrator shall, in con-
2 sultation with such other Federal agencies, State, tribal,
3 and territorial governments, and academic institutions as
4 the Administrator considers appropriate, the coordinating
5 committee under section 5(d), and the panel under section
6 8(a), support or maintain”;

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

13 “(b) RESPONSIBILITIES.—The research program
14 supported or maintained under subsection (a) shall—”;
15 and

16 (3) in subsection (b), as designated by para-
17 graph (2)—

18 (A) by amending paragraph (1) to read as
19 follows:

20 “(1) consider other appropriate and cost effec-
21 tive solutions to mitigate the impact of tsunami, in-
22 cluding the improvement of near-field and distant
23 tsunami detection and forecasting capabilities, which
24 may include use of a new generation of the Deep-
25 ocean Assessment and Reporting of Tsunamis array,

1 integration of tsunami sensors into commercial and
2 Federal telecommunications cables, and other real-
3 time tsunami monitoring systems and supercomputer
4 capacity of the Administration to develop a rapid
5 tsunami forecast for all United States coastlines;”;

6 (B) in paragraph (3)—

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

9 (ii) by striking “and” at the end;

10 (C) by redesignating paragraph (4) as
11 paragraph (5);

12 (D) by inserting after paragraph (3) the
13 following:

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

17 (E) in paragraph (5), as redesignated by
18 subparagraph (C), by striking “to the scientific
19 community” and inserting “to the public and
20 the scientific community”.

21 **SEC. __07. GLOBAL TSUNAMI WARNING AND MITIGATION**

22 **NETWORK.**

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

24 (1) by amending subsection (a) to read as fol-
25 lows:

1 “(a) SUPPORT FOR DEVELOPMENT OF AN INTER-
2 NATIONAL TSUNAMI WARNING SYSTEM.—The Adminis-
3 trator shall, in coordination with the Secretary of State
4 and in consultation with such other agencies as the Ad-
5 ministrator considers relevant, provide technical assist-
6 ance, operational support, and training to the Intergovern-
7 mental Oceanographic Commission of the United Nations
8 Educational, Scientific, and Cultural Organization, the
9 World Meteorological Organization of the United Nations,
10 and such other international entities as the Administrator
11 considers appropriate, as part of the international efforts
12 to develop a fully functional global tsunami forecast and
13 warning system comprised of regional tsunami warning
14 networks.”;

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

17 (3) in subsection (c)—

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

20 (B) in paragraph (2)—

21 (i) by striking “establish” and insert-
22 ing “support”; and

23 (ii) by striking “establishing” and in-
24 serting “supporting”.

1 **SEC. __08. TSUNAMI SCIENCE AND TECHNOLOGY ADVISORY**

2 **PANEL.**

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

4 (1) by redesignating section 8 (33 U.S.C. 3207)

5 as section 9; and

6 (2) by inserting after section 7 (33 U.S.C.

7 3206) the following:

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

9 **PANEL.**

10 “(a) DESIGNATION.—The Administrator shall des-
11 ignate an existing working group within the Science Advi-
12 sory Board of the Administration to serve as the Tsunami
13 Science and Technology Advisory Panel to provide advice
14 to the Administrator on matters regarding tsunami
15 science, technology, and regional preparedness.

16 “(b) MEMBERSHIP.—

17 “(1) COMPOSITION.—The Panel shall be com-
18 posed of no fewer than 7 members selected by the
19 Administrator from among individuals from aca-
20 demia or State agencies who have academic or prac-
21 tical expertise in physical sciences, social sciences,
22 information technology, coastal resilience, emergency
23 management, or such other disciplines as the Ad-
24 ministrator considers appropriate.

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

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

3 “(1) review the activities of the Administration,
4 and other Federal activities as appropriate, relating
5 to tsunami research, detection, forecasting, warning,
6 mitigation, resiliency, and preparation; and

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

9 “(A) the findings of the working group
10 with respect to the most recent review con-
11 ducted under paragraph (1); and

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

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

1 **SEC. 09. REPORTS.**

2 (a) **REPORT ON IMPLEMENTATION OF TSUNAMI**
3 **WARNING AND EDUCATION ACT.—**

4 (1) **IN GENERAL.**—Not later than 1 year after
5 the date of the enactment of this Act, the Adminis-
6 trator of the National Oceanic and Atmospheric Ad-
7 ministration shall submit to Congress a report on
8 the implementation of the Tsunami Warning and
9 Education Act (33 U.S.C. 3201 et seq.).

10 (2) **ELEMENTS.**—The report required by para-
11 graph (1) shall include the following:

12 (A) A detailed description of the progress
13 made in implementing sections 4(d)(6), 5(b)(6),
14 and 6(b)(4) of the Tsunami Warning and Edu-
15 cation Act.

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

24 (b) **REPORT ON NATIONAL EFFORTS THAT SUPPORT**
25 **RAPID RESPONSE FOLLOWING NEAR-SHORE TSUNAMI**
26 **EVENTS.—**

1 (1) IN GENERAL.—Not later than 1 year after
2 the date of the enactment of this Act, the Adminis-
3 trator and the Secretary of Homeland Security shall
4 jointly, in coordination with the Director of the
5 United States Geological Survey, Administrator of
6 the Federal Emergency Management Agency, the
7 Chief of the National Guard Bureau, and the heads
8 of such other Federal agencies as the Administrator
9 considers appropriate, submit to the appropriate
10 committees of Congress a report on the national ef-
11 forts in effect on the day before the date of the en-
12 actment of this Act that support and facilitate rapid
13 emergency response following a domestic near-shore
14 tsunami event to better understand domestic effects
15 of earthquake derived tsunami on people, infrastruc-
16 ture, and communities in the United States.

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

19 (A) A description of scientific or other
20 measurements collected on the day before the
21 date of the enactment of this Act to quickly
22 identify and quantify lost or degraded infra-
23 structure or terrestrial formations.

24 (B) A description of scientific or other
25 measurements that would be necessary to col-

1 lect to quickly identify and quantify lost or de-
2 graded infrastructure or terrestrial formations.

3 (C) Identification and evaluation of Fed-
4 eral, State, local, tribal, territorial, and military
5 first responder and search and rescue operation
6 centers, bases, and other facilities as well as
7 other critical response assets and infrastruc-
8 ture, including search and rescue aircraft, lo-
9 cated within near-shore and distant tsunami in-
10 undation areas on the day before the date of
11 the enactment of this Act.

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

19 (E) A description of redevelopment plans
20 and reports in effect on the day before the date
21 of the enactment of this Act for communities in
22 areas that are at high-risk for near-shore tsu-
23 nami, as well identification of States or commu-
24 nities that do not have redevelopment plans.

1 (F) Recommendations to enhance near-
2 shore tsunami preparedness and response plans,
3 including recommended responder exercises,
4 predisaster planning, and mitigation needs.

5 (G) Such other data and analysis informa-
6 tion as the Administrator and the Secretary of
7 Homeland Security consider appropriate.

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

11 (A) the Committee on Commerce, Science,
12 and Transportation and the Committee on
13 Homeland Security and Governmental Affairs
14 of the Senate; and

15 (B) the Committee on Science, Space, and
16 Technology and the Committee on Homeland
17 Security of the House of Representatives.

18 **SEC. 10. AUTHORIZATION OF APPROPRIATIONS.**

19 Section 9 of the Act, as redesignated by section
20 8(a)(1) of this Act, is amended—

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

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

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

1 “(6) \$25,800,000 for each of fiscal years 2016
2 through 2021, of which—

3 “(A) not less than 27 percent of the
4 amount appropriated for each fiscal year shall
5 be for activities conducted at the State level
6 under the tsunami hazard mitigation program
7 under section 5; and

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

11 **SEC. __11. OUTREACH RESPONSIBILITIES.**

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

18 (1) the development of outreach plans to ensure
19 the close integration of tsunami warning centers
20 supported or maintained under section 4(d) of the
21 Tsunami Warning and Education Act (33 U.S.C.
22 3203(d)) with local Weather Forecast Offices of the
23 National Weather Service and emergency managers;

24 (2) working with appropriate local Weather
25 Forecast Offices to ensure they have the technical

1 knowledge and capability to disseminate tsunami
2 warnings to the communities they serve; and

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

6 **SEC. _12. REPEAL OF DUPLICATE PROVISIONS OF LAW.**

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

11 (b) CONSTRUCTION.—Nothing in this section shall be
12 construed to repeal, or affect in any way, Public Law 109–
13 424.