

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.

IN THE SENATE OF THE UNITED STATES—115th Cong., 1st Sess.

H. R. 353

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

Viz:

1 At the appropriate place, insert the following:
2 **TITLE _____—TSUNAMI WARNING,**
3 **EDUCATION, AND RESEARCH**
4 **ACT OF 2017**

5 **SEC. _01. SHORT TITLE.**

6 This title may be cited as the "Tsunami Warning,
7 Education, and Research Act of 2017".

1 **SEC. __02. REFERENCES TO THE TSUNAMI WARNING AND**
2 **EDUCATION ACT.**

3 Except as otherwise expressly provided, whenever in
4 this title 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 enacted as title VIII of the Magnuson-Ste-
9 vens Fishery Conservation and Management Reauthoriza-
10 tion Act of 2006 (Public Law 109–479; 33 U.S.C. 3201
11 et seq.).

12 **SEC. __03. EXPANSION OF PURPOSES OF TSUNAMI WARN-**
13 **ING AND EDUCATION ACT.**

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

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

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

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

25 (3) by amending paragraph (3) to read as fol-
26 lows:

1 “(3) to improve and develop standards and
2 guidelines for mapping, modeling, and assessment
3 efforts to improve tsunami detection, forecasting,
4 warnings, notification, mitigation, resiliency, re-
5 sponse, outreach, and recovery;”;

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

8 (5) by inserting after paragraph (3) the fol-
9 lowing:

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

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

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

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

21 (7) in paragraph (6), as redesignated, by strik-
22 ing “, including the Indian Ocean; and” and insert-
23 ing a semicolon; and

24 (8) by inserting after paragraph (6), as redesign-
25 ated, the following:

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

3 **SEC. _04. MODIFICATION OF TSUNAMI FORECASTING AND**
4 **WARNING PROGRAM.**

5 (a) IN GENERAL.—Subsection (a) of section 804 (33
6 U.S.C. 3203(a)) is amended by striking “Atlantic Ocean,
7 Caribbean Sea, and Gulf of Mexico region” and inserting
8 “Atlantic Ocean region, including the Caribbean Sea and
9 the Gulf of Mexico”.

10 (b) COMPONENTS.—Subsection (b) of section 804 (33
11 U.S.C. 3203(b)) is amended—

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

14 (2) by redesignating paragraphs (7) through
15 (9) as paragraphs (8) through (10), respectively;

16 (3) by redesignating paragraphs (2) through
17 (6) as paragraphs (3) through (7), respectively;

18 (4) by inserting after paragraph (1) the fol-
19 lowing:

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

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

1 “(5) provide tsunami forecasting capability
2 based on models and measurements, including tsu-
3 nami inundation models and maps for use in in-
4 creasing the preparedness of communities and safe-
5 guarding port and harbor operations, that incor-
6 porate inputs, including—

7 “(A) the United States and global ocean
8 and coastal observing system;

9 “(B) the global Earth observing system;

10 “(C) the global seismic network;

11 “(D) the Advanced National Seismic sys-
12 tem;

13 “(E) tsunami model validation using his-
14 torical and paleotsunami data;

15 “(F) digital elevation models and bathym-
16 etry; and

17 “(G) newly developing tsunami detection
18 methodologies using satellites and airborne re-
19 mote sensing;”;

20 (6) by amending paragraph (7), as redesignated
21 by paragraph (3), to read as follows:

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

1 and the Director of the National Science Foundation
2 shall—

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

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

11 (7) in paragraph (8), as redesignated by para-
12 graph (2)—

13 (A) by inserting “, including graphical
14 warning products,” after “warnings”;

15 (B) by inserting “, territories,” after
16 “States”; and

17 (C) by inserting “and Wireless Emergency
18 Alerts” after “Hazards Program”; and

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

21 (A) by inserting “provide and” before
22 “allow”; and

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

1 (c) TSUNAMI WARNING SYSTEM.—Subsection (c) of
2 section 804 (33 U.S.C. 3203(c)) is amended to read as
3 follows:

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 804 (33 U.S.C. 3203(d)) is amended to read
3 as 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
25 805 to ensure ongoing sharing of information

1 between forecasters and emergency manage-
2 ment officials.

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

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

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

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

1 “(4) COORDINATION WITH NATIONAL WEATHER
2 SERVICE.—The Administrator shall coordinate with
3 the forecast offices of the National Weather Service,
4 the centers supported or maintained under para-
5 graph (1), and such program offices of the Adminis-
6 tration as the Administrator or the coordinating
7 committee, as established in section 805(d), consider
8 appropriate to ensure that regional and local fore-
9 cast offices—

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

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

17 “(C) implement mass communication tools
18 in effect on the day before the date of the en-
19 actment of the Tsunami Warning, Education,
20 and Research Act of 2017 used by the National
21 Weather Service on such date and newer mass
22 communication technologies as they are devel-
23 oped as a part of the Weather-Ready Nation
24 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 under paragraph (1), including the use of soft-
8 ware applications, checklists, decision support
9 tools, and tsunami warning products that have
10 been standardized across the program sup-
11 ported under this section;

12 “(B) ensure that processes and products of
13 the warning system operated under subsection
14 (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 under subsection
6 (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, as rapidly
21 as possible, such computer models as are needed for
22 purposes of the tsunami warning system operated
23 under subsection (c).”.

1 (e) TRANSFER OF TECHNOLOGY; MAINTENANCE AND
2 UPGRADES.—Subsection (e) of section 804 (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 804 (33 U.S.C. 3203(f)) is amended to read as fol-
6 lows:

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

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

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

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

16 “(B) to prioritize the necessary assets in
17 support of the tsunami forecast and warning
18 program.”.

19 (g) UNNECESSARY PROVISIONS.—Section 804 (33
20 U.S.C. 3203) is further amended—

21 (1) by striking subsection (g);

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

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

1 (h) CONGRESSIONAL NOTIFICATIONS.—Subsection
2 (g) of section 804 (33 U.S.C. 3203(g)), as redesignated
3 by 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 805(a) (33 U.S.C.
20 3204(a)) 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 805 (33 U.S.C. 3204) is amended by
6 striking subsections (c) and (d) and inserting the fol-
7 lowing:

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

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

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

22 “(3) Coordination with other Federal prepared-
23 ness and mitigation programs to leverage Federal in-
24 vestment, avoid duplication, and maximize effort.

1 “(4) Activities to promote the adoption of tsu-
2 nami resilience, preparedness, warning, and mitiga-
3 tion measures by Federal, State, territorial, tribal,
4 and local governments and nongovernmental entities,
5 including educational and risk communication pro-
6 grams to discourage development in high-risk areas.

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

10 “(A) The sources, sizes, and other relevant
11 historical data of tsunami in the region, includ-
12 ing paleotsunami data.

13 “(B) Inundation models and maps of crit-
14 ical infrastructure and socioeconomic vulner-
15 ability in areas subject to tsunami inundation.

16 “(C) Maps of evacuation areas and evacu-
17 ation routes, including, when appropriate, traf-
18 fic studies that evaluate the viability of evacu-
19 ation routes.

20 “(D) Evaluations of the size of populations
21 that will require evacuation, including popu-
22 lations with special evacuation needs.

23 “(E) Evaluations and technical assistance
24 for vertical evacuation structure planning for
25 communities where models indicate limited or

1 no ability for timely evacuation, especially in
2 areas at risk of near shore generated tsunami.

3 “(F) Evaluation of at-risk ports and har-
4 bors.

5 “(G) Evaluation of the effect of tsunami
6 currents on the foundations of closely-spaced,
7 coastal high-rise structures.

8 “(6) Activities to promote preparedness in at-
9 risk ports and harbors, including the following:

10 “(A) Evaluation and recommendation of
11 procedures for ports and harbors in the event of
12 a distant or near-field tsunami.

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

16 “(7) Activities to support the development of
17 community-based outreach and education programs
18 to ensure community readiness and resilience, in-
19 cluding the following:

20 “(A) The development, implementation,
21 and assessment of technical training and public
22 education programs, including education pro-
23 grams that address unique characteristics of
24 distant and near-field tsunami.

1 “(B) The development of decision support
2 tools.

3 “(C) The incorporation of social science re-
4 search into community readiness and resilience
5 efforts.

6 “(D) The development of evidence-based
7 education guidelines.

8 “(8) Dissemination of guidelines and standards
9 for community planning, education, and training
10 products, programs, and tools, including—

11 “(A) standards for—

12 “(i) mapping products;

13 “(ii) inundation models; and

14 “(iii) effective emergency exercises;

15 and

16 “(B) recommended guidance for at-risk
17 port and harbor tsunami warning, evacuation,
18 and response procedures in coordination with
19 the Coast Guard and the Federal Emergency
20 Management Agency.

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

24 “(1) Multidisciplinary vulnerability assessment
25 research, education, and training to help integrate

1 risk management and resilience objectives with com-
2 munity development planning and policies.

3 “(2) Risk management training for local offi-
4 cials and community organizations to enhance un-
5 derstanding and preparedness.

6 “(3) In coordination with the Federal Emer-
7 gency Management Agency, interagency, Federal,
8 State, tribal, and territorial intergovernmental tsu-
9 nami response exercise planning and implementation
10 in high risk areas.

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

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

19 “(A) access to data and products derived
20 from observing and detection systems; and

21 “(B) development and maintenance of new
22 integrated data products to support risk man-
23 agement, risk assessment, and resilience pro-
24 grams.

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

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

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

16 (c) REPORT ON ACCREDITATION OF TSUNAMIREADY
17 PROGRAM.—Not later than 180 days after the date of en-
18 actment of this Act, the Administrator of the National
19 Oceanic and Atmospheric Administration shall submit to
20 the Committee on Commerce, Science, and Transportation
21 of the Senate and the Committee on Science, Space, and
22 Technology of the House of Representatives a report on
23 which authorities and activities would be needed to have
24 the TsunamiReady program of the National Weather

1 Service accredited by the Emergency Management Accredited-
2 itation Program.

3 **SEC. 806. MODIFICATION OF TSUNAMI RESEARCH PRO-**
4 **GRAM.**

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

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

10 “(a) IN GENERAL.—The Administrator shall, in con-
11 sultation with such other Federal agencies, State, tribal,
12 and territorial governments, and academic institutions as
13 the Administrator considers appropriate, the coordinating
14 committee under section 805(d), and the panel under sec-
15 tion 808(a), support or maintain”;

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

20 “assessment for tsunami tracking and numerical
21 forecast modeling, and standards development.

22 “(b) RESPONSIBILITIES.—The research program
23 supported or maintained under subsection (a) shall—”;
24 and

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

3 (A) by amending paragraph (1) to read as
4 follows:

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

16 (B) in paragraph (3)—

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

19 (ii) by striking “and” at the end;

20 (C) by redesignating paragraph (4) as
21 paragraph (5);

22 (D) by inserting after paragraph (3) the
23 following:

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

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

8 **SEC. 07. GLOBAL TSUNAMI WARNING AND MITIGATION**
9 **NETWORK.**

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

11 (1) by amending subsection (a) to read as fol-
12 lows:

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

1 warning system comprised of regional tsunami warning
2 networks.”;

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

5 (3) in subsection (c)—

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

8 (B) in paragraph (2)—

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

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

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

14 **PANEL.**

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

16 (1) by redesignating section 808 (33 U.S.C.
17 3207) as section 809; and

18 (2) by inserting after section 807 (33 U.S.C.
19 3206) the following:

20 **“SEC. 808. TSUNAMI SCIENCE AND TECHNOLOGY ADVISORY**

21 **PANEL.**

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

1 to the Administrator on matters regarding tsunami
2 science, technology, and regional preparedness.

3 “(b) MEMBERSHIP.—

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

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

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

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

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

22 “(A) the findings of the working group
23 with respect to the most recent review con-
24 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 (b) TABLE OF CONTENTS AMENDMENT.—The table
14 of contents in section 1(b) of the Magnuson-Stevens Fish-
15 ery Conservation and Management Reauthorization Act of
16 2006 (Public Law 109–479; 120 Stat. 3575) is amended
17 by striking the item relating to section 808 and inserting
18 the following:

 “Sec. 808. Tsunami Science and Technology Advisory Panel.

 “Sec. 809. Authorization of appropriations.”.

19 **SEC. _09. REPORTS.**

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

22 (1) IN GENERAL.—Not later than 1 year after
23 the date of the enactment of this Act, the Adminis-
24 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 enacted as title VIII of the Magnu-
4 son-Stevens Fishery Conservation and Management
5 Reauthorization Act of 2006 (Public Law 109–479;
6 33 U.S.C. 3201 et seq.), as amended by this Act.

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

9 (A) A detailed description of the progress
10 made in implementing sections 804(d)(6),
11 805(b), and 806(b)(4) of the Tsunami Warning
12 and Education Act the Magnuson-Stevens Fish-
13 ery Conservation and Management Reauthor-
14 ization Act of 2006 (Public Law 109–479; 33
15 U.S.C. 3201 et seq.).

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 804 of the Tsunami
20 Warning and Education Act (33 U.S.C. 3203),
21 as amended by this Act, may be standardized
22 and streamlined with warnings and warning
23 products for hurricanes, coastal storms, and
24 other coastal flooding events.

1 (b) REPORT ON NATIONAL EFFORTS THAT SUPPORT
2 RAPID RESPONSE FOLLOWING NEAR-SHORE TSUNAMI
3 EVENTS.—

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

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

22 (A) A description of scientific or other
23 measurements collected on the day before the
24 date of the enactment of this Act to quickly

1 identify and quantify lost or degraded infra-
2 structure or terrestrial formations.

3 (B) A description of scientific or other
4 measurements that would be necessary to col-
5 lect to quickly identify and quantify lost or de-
6 graded infrastructure or terrestrial formations.

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

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

23 (E) A description of redevelopment plans
24 and reports in effect on the day before the date
25 of the enactment of this Act for communities in

1 areas that are at high-risk for near-shore tsu-
2 nami, as well identification of States or commu-
3 nities that do not have redevelopment plans.

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

8 (G) Such other data and analysis informa-
9 tion as the Administrator and the Secretary of
10 Homeland Security consider appropriate.

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

14 (A) the Committee on Commerce, Science,
15 and Transportation and the Committee on
16 Homeland Security and Governmental Affairs
17 of the Senate; and

18 (B) the Committee on Science, Space, and
19 Technology, the Committee on Homeland Secu-
20 rity, and the Committee on Transportation and
21 Infrastructure of the House of Representatives.

22 **SEC. __10. AUTHORIZATION OF APPROPRIATIONS.**

23 Section 809 of the Act, as redesignated by section
24 __08(a)(1) of this Act, is amended—

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

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

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

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

8 “(A) not less than 27 percent of the
9 amount appropriated for each fiscal year shall
10 be for activities conducted at the State level
11 under the tsunami hazard mitigation program
12 under section 805; and

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

16 **SEC. __11. OUTREACH RESPONSIBILITIES.**

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

23 (1) the development of outreach plans to ensure
24 the close integration of tsunami warning centers
25 supported or maintained under section 804(d) of the

1 Tsunami Warning and Education Act (33 U.S.C.
2 3203(d)), as amended by this Act, with local Weath-
3 er Forecast Offices of the National Weather Service
4 and emergency managers;

5 (2) working with appropriate local Weather
6 Forecast Offices to ensure they have the technical
7 knowledge and capability to disseminate tsunami
8 warnings to the communities they serve; and

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

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

13 (a) **REPEAL.**—The Tsunami Warning and Education
14 Act enacted by Public Law 109–424 (120 Stat. 2902) is
15 repealed.

16 (b) **CONSTRUCTION.**—Nothing in this section may be
17 construed to repeal, or affect in any way, the Tsunami
18 Warning and Education Act enacted as title VIII of the
19 Magnuson-Stevens Fishery Conservation and Manage-
20 ment Reauthorization Act of 2006 (Public Law 109–479;
21 33 U.S.C. 3201 et seq.).