

**Suspend the Rules and Pass the Bill, H.R. 1561, with An Amendment**

**(The amendment strikes all after the enacting clause and inserts a new text)**

114<sup>TH</sup> CONGRESS  
1<sup>ST</sup> SESSION

# 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.

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## IN THE HOUSE OF REPRESENTATIVES

MARCH 24, 2015

Mr. LUCAS (for himself, Ms. BONAMICI, Mr. BRIDENSTINE, Mr. SMITH of Texas, Ms. EDDIE BERNICE JOHNSON of Texas, Mr. STEWART, and Mr. ROHRABACHER) introduced the following bill; which was referred to the Committee on Science, Space, and Technology

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## A BILL

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.

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 “Weather Research and  
5 Forecasting Innovation Act of 2015”.

6 **SEC. 2. PUBLIC SAFETY PRIORITY.**

7 In accordance with NOAA’s critical mission to pro-  
8 vide science, service, and stewardship, the Under Sec-  
9 retary shall prioritize weather research, across all weather  
10 programs, to improve weather data, forecasts, and warn-  
11 ings for the protection of life and property and the en-  
12 hancement of the national economy.

13 **SEC. 3. WEATHER RESEARCH AND FORECASTING INNOVA-**  
14 **TION.**

15 (a) PROGRAM.—The Assistant Administrator for  
16 OAR shall conduct a program to develop improved under-  
17 standing of and forecast capabilities for atmospheric  
18 events and their impacts, placing priority on developing  
19 more accurate, timely, and effective warnings and fore-  
20 casts of high impact weather events that endanger life and  
21 property.

22 (b) PROGRAM ELEMENTS.—The program described  
23 in subsection (a) shall focus on the following activities:

24 (1) Improving the fundamental understanding  
25 of weather consistent with section 2, including the

1 boundary layer and other atmospheric processes af-  
2 fecting high impact weather events.

3 (2) Improving the understanding of how the  
4 public receives, interprets, and responds to warnings  
5 and forecasts of high impact weather events that en-  
6 danger life and property.

7 (3) Research and development, and transfer of  
8 knowledge, technologies, and applications to the  
9 NWS and other appropriate agencies and entities,  
10 including the American weather industry and aca-  
11 demic partners, related to—

12 (A) advanced radar, radar networking  
13 technologies, and other ground-based tech-  
14 nologies, including those emphasizing rapid,  
15 fine-scale sensing of the boundary layer and  
16 lower troposphere, and the use of innovative,  
17 dual-polarization, phased array technologies;

18 (B) aerial weather observing systems;

19 (C) high performance computing and infor-  
20 mation technology and wireless communication  
21 networks;

22 (D) advanced numerical weather prediction  
23 systems and forecasting tools and techniques  
24 that improve the forecasting of timing, track,

1 intensity, and severity of high impact weather,  
2 including through—

3 (i) the development of more effective  
4 mesoscale models;

5 (ii) more effective use of existing, and  
6 the development of new, regional and na-  
7 tional cloud-resolving models;

8 (iii) enhanced global weather models;  
9 and

10 (iv) integrated assessment models;

11 (E) quantitative assessment tools for meas-  
12 uring the impact and value of data and observ-  
13 ing systems, including OSSEs (as described in  
14 section 8), OSEs, and AOAs;

15 (F) atmospheric chemistry and interactions  
16 essential to accurately characterizing atmos-  
17 pheric composition and predicting meteorolog-  
18 ical processes, including cloud microphysical,  
19 precipitation, and atmospheric electrification  
20 processes, to more effectively understand their  
21 role in severe weather; and

22 (G) additional sources of weather data and  
23 information, including commercial observing  
24 systems.

1           (4) A technology transfer initiative, carried out  
2 jointly and in coordination with the Assistant Ad-  
3 ministrator for NWS, and in cooperation with the  
4 American weather industry and academic partners,  
5 to ensure continuous development and transition of  
6 the latest scientific and technological advances into  
7 NWS operations and to establish a process to sunset  
8 outdated and expensive operational methods and  
9 tools to enable cost-effective transfer of new methods  
10 and tools into operations.

11       (c) EXTRAMURAL RESEARCH.—

12           (1) IN GENERAL.—In carrying out the program  
13 under this section, the Assistant Administrator for  
14 OAR shall collaborate with and support the non-  
15 Federal weather research community, which includes  
16 institutions of higher education, private entities, and  
17 nongovernmental organizations, by making funds  
18 available through competitive grants, contracts, and  
19 cooperative agreements.

20           (2) SENSE OF CONGRESS.—It is the sense of  
21 Congress that not less than 30 percent of the funds  
22 for weather research and development at OAR  
23 should be made available for the purpose described  
24 in paragraph (1).

1 (d) REPORT.—The Under Secretary shall transmit to  
2 Congress annually, concurrently with NOAA’s budget re-  
3 quest, a description of current and planned activities  
4 under this section.

5 **SEC. 4. TORNADO WARNING IMPROVEMENT AND EXTEN-**  
6 **SION PROGRAM.**

7 (a) IN GENERAL.—The Under Secretary, in collabo-  
8 ration with the American weather industry and academic  
9 partners, shall establish a tornado warning improvement  
10 and extension program.

11 (b) GOAL.—The goal of such program shall be to re-  
12 duce the loss of life and economic losses from tornadoes  
13 through the development and extension of accurate, effec-  
14 tive, and timely tornado forecasts, predictions, and warn-  
15 ings, including the prediction of tornadoes beyond one  
16 hour in advance.

17 (c) PROGRAM PLAN.—Not later than 6 months after  
18 the date of enactment of this Act, the Assistant Adminis-  
19 trator for OAR, in coordination with the Assistant Admin-  
20 istrator for NWS, shall develop a program plan that de-  
21 tails the specific research, development, and technology  
22 transfer activities, as well as corresponding resources and  
23 timelines, necessary to achieve the program goal.

24 (d) BUDGET FOR PLAN.—Following completion of  
25 the plan, the Under Secretary, acting through the Assist-

1 ant Administrator for OAR, in coordination with the As-  
2 sistant Administrator for NWS, shall transmit annually  
3 to Congress a proposed budget corresponding to the activi-  
4 ties identified in the plan.

5 **SEC. 5. HURRICANE FORECAST IMPROVEMENT PROGRAM.**

6 (a) IN GENERAL.—The Under Secretary, in collabo-  
7 ration with the American weather industry and academic  
8 partners, shall maintain the Hurricane Forecast Improve-  
9 ment Program (HFIP).

10 (b) GOAL.—The goal of such program shall be to de-  
11 velop and extend accurate hurricane forecasts and warn-  
12 ings in order to reduce loss of life, injury, and damage  
13 to the economy.

14 (c) PROGRAM PLAN.—Not later than 6 months after  
15 the date of enactment of this Act, the Assistant Adminis-  
16 trator for OAR, in consultation with the Assistant Admin-  
17 istrator for NWS, shall develop a program plan that de-  
18 tails the specific research, development, and technology  
19 transfer activities, as well as corresponding resources and  
20 timelines, necessary to achieve the program goal.

21 (d) BUDGET FOR PLAN.—Following completion of  
22 the plan, the Under Secretary, acting through the Assist-  
23 ant Administrator for OAR, in consultation with the As-  
24 sistant Administrator for NWS, shall transmit annually

1 to Congress a proposed budget corresponding to the activi-  
2 ties identified in the plan.

3 **SEC. 6. WEATHER RESEARCH AND DEVELOPMENT PLAN-**  
4 **NING.**

5 Not later than 6 months after the date of enactment  
6 of this Act, and annually thereafter, the Under Secretary,  
7 acting through the Assistant Administrator for OAR, in  
8 coordination with the Assistant Administrators for NWS  
9 and NESDIS, shall issue a research and development and  
10 research to operations plan to restore and maintain  
11 United States leadership in numerical weather prediction  
12 and forecasting that—

13 (1) describes the forecasting skill and tech-  
14 nology goals, objectives, and progress of NOAA in  
15 carrying out the program conducted under section 3;

16 (2) identifies and prioritizes specific research  
17 and development activities, and performance metrics,  
18 weighted to meet the operational weather mission of  
19 NWS to achieve a weather-ready Nation;

20 (3) describes how the program will collaborate  
21 with stakeholders, including the American weather  
22 industry and academic partners; and

23 (4) identifies, through consultation with the Na-  
24 tional Science Foundation, American weather indus-  
25 try, and academic partners, research necessary to

1       enhance the integration of social science knowledge  
2       into weather forecast and warning processes, includ-  
3       ing to improve the communication of threat informa-  
4       tion necessary to enable improved severe weather  
5       planning and decisionmaking on the part of individ-  
6       uals and communities.

7       **SEC. 7. OBSERVING SYSTEM PLANNING.**

8       The Under Secretary shall—

9               (1) develop and maintain a prioritized list of  
10       observation data requirements necessary to ensure  
11       weather forecasting capabilities to protect life and  
12       property to the maximum extent practicable;

13              (2) undertake, using OSSEs, OSEs, AOAs, and  
14       other appropriate assessment tools, ongoing system-  
15       atic evaluations of the combination of observing sys-  
16       tems, data, and information needed to meet the re-  
17       quirements listed under paragraph (1), assessing  
18       various options to maximize observational capabili-  
19       ties and their cost-effectiveness;

20              (3) identify current and potential future data  
21       gaps in observing capabilities related to the require-  
22       ments listed under paragraph (1); and

23              (4) determine a range of options to address  
24       gaps identified under paragraph (3).

1 **SEC. 8. OBSERVING SYSTEM SIMULATION EXPERIMENTS.**

2 (a) IN GENERAL.—In support of the requirements of  
3 section 7, the Assistant Administrator for OAR shall un-  
4 dertake OSSEs to quantitatively assess the relative value  
5 and benefits of observing capabilities and systems. Tech-  
6 nical and scientific OSSE evaluations—

7 (1) may include assessments of the impact of  
8 observing capabilities on—

9 (A) global weather prediction;

10 (B) hurricane track and intensity fore-  
11 casting;

12 (C) tornado warning lead times and accu-  
13 racy;

14 (D) prediction of mid-latitude severe local  
15 storm outbreaks; and

16 (E) prediction of storms that have the po-  
17 tential to cause extreme precipitation and flood-  
18 ing lasting from 6 hours to 1 week; and

19 (2) shall be conducted in cooperation with other  
20 appropriate entities within NOAA, other Federal  
21 agencies, the American weather industry, and aca-  
22 demic partners to ensure the technical and scientific  
23 merit of OSSE results.

24 (b) REQUIREMENTS.—OSSEs shall quantitatively—

25 (1) determine the potential impact of proposed  
26 space-based, suborbital, and in situ observing sys-

1       tems on analyses and forecasts, including potential  
2       impacts on extreme weather events across all parts  
3       of the Nation;

4           (2) evaluate and compare observing system de-  
5       sign options; and

6           (3) assess the relative capabilities and costs of  
7       various observing systems and combinations of ob-  
8       serving systems in providing data necessary to pro-  
9       tect life and property.

10       (c) IMPLEMENTATION.—OSSEs—

11           (1) shall be conducted prior to the acquisition  
12       of major Government-owned or Government-leased  
13       operational observing systems, including polar-orbit-  
14       ing and geostationary satellite systems, with a  
15       lifecycle cost of more than \$500,000,000; and

16           (2) shall be conducted prior to the purchase of  
17       any major new commercially provided data with a  
18       lifecycle cost of more than \$500,000,000.

19       (d) PRIORITY OSSEs.—

20           (1) GLOBAL NAVIGATION SATELLITE SYSTEM  
21       RADIO OCCULTATION.—Not later than December 31,  
22       2015, the Assistant Administrator for OAR shall  
23       complete an OSSE to assess the value of data from  
24       Global Navigation Satellite System Radio Occulta-  
25       tion.

1           (2) GEOSTATIONARY HYPERSPECTRAL SOUND-  
2           ER GLOBAL CONSTELLATION.—Not later than De-  
3           cember 31, 2016, the Assistant Administrator for  
4           OAR shall complete an OSSE to assess the value of  
5           data from a geostationary hyperspectral sounder  
6           global constellation.

7           (e) RESULTS.—Upon completion of all OSSEs, re-  
8           sults shall be publicly released and accompanied by an as-  
9           sessment of related private and public sector weather data  
10          sourcing options, including their availability, affordability,  
11          and cost effectiveness. Such assessments shall be devel-  
12          oped in accordance with section 50503 of title 51, United  
13          States Code.

14       **SEC. 9. COMPUTING RESOURCES PRIORITIZATION REPORT.**

15          Not later than 12 months after the date of enactment  
16          of this Act, and annually thereafter, the Under Secretary,  
17          acting through the NOAA Chief Information Officer, in  
18          coordination with the Assistant Administrator for OAR  
19          and the Assistant Administrator for NWS, shall produce  
20          and make publicly available a report that explains how  
21          NOAA intends to—

22               (1) continually support upgrades to pursue the  
23               fastest, most powerful, and cost effective high per-  
24               formance computing technologies in support of its  
25               weather prediction mission;

1           (2) ensure a balance between the research to  
2           operations requirements to develop the next genera-  
3           tion of regional and global models as well as highly  
4           reliable operational models;

5           (3) take advantage of advanced development  
6           concepts to, as appropriate, make next generation  
7           weather prediction models available in beta-test  
8           mode to operational forecasters, the American  
9           weather industry, and partners in academic and gov-  
10          ernment research; and

11          (4) use existing computing resources to improve  
12          advanced research and operational weather pre-  
13          diction.

14 **SEC. 10. COMMERCIAL WEATHER DATA.**

15          (a) AMENDMENT.—Section 60161 of title 51, United  
16          States Code, is amended by adding at the end the fol-  
17          lowing: “This prohibition shall not extend to—

18                 “(1) the purchase of weather data through con-  
19                 tracts with commercial providers; or

20                 “(2) the placement of weather satellite instru-  
21                 ments on cohosted government or private payloads.”.

22          (b) STRATEGY.—

23                 (1) IN GENERAL.—Not later than 6 months  
24                 after the date of enactment of this Act, the Sec-  
25                 retary of Commerce, in consultation with the Under

1 Secretary, shall transmit to the Committee on  
2 Science, Space, and Technology of the House of  
3 Representatives and the Committee on Commerce,  
4 Science, and Transportation of the Senate a strategy  
5 to enable the procurement of quality commercial  
6 weather data. The strategy shall assess the range of  
7 commercial opportunities, including public-private  
8 partnerships, for obtaining surface-based, aviation-  
9 based, and space-based weather observations. The  
10 strategy shall include the expected cost effectiveness  
11 of these opportunities as well as provide a plan for  
12 procuring data, including an expected implementa-  
13 tion timeline, from these nongovernmental sources,  
14 as appropriate.

15 (2) REQUIREMENTS.—The strategy shall in-  
16 clude—

17 (A) an analysis of financial or other bene-  
18 fits to, and risks associated with, acquiring  
19 commercial weather data or services, including  
20 through multiyear acquisition approaches;

21 (B) an identification of methods to address  
22 planning, programming, budgeting, and execu-  
23 tion challenges to such approaches, including—

24 (i) how standards will be set to ensure  
25 that data is reliable and effective;

1                   (ii) how data may be acquired through  
2                   commercial experimental or innovative  
3                   techniques and then evaluated for integra-  
4                   tion into operational use;

5                   (iii) how to guarantee public access to  
6                   all forecast-critical data to ensure that the  
7                   American weather industry and the public  
8                   continue to have access to information crit-  
9                   ical to their work; and

10                  (iv) in accordance with section 50503  
11                  of title 51, United States Code, methods to  
12                  address potential termination liability or  
13                  cancellation costs associated with weather  
14                  data or service contracts; and

15                  (C) an identification of any changes needed  
16                  in the requirements development and approval  
17                  processes of the Department of Commerce to  
18                  facilitate effective and efficient implementation  
19                  of such strategy.

20                  (3) **AUTHORITY FOR AGREEMENTS.**—The As-  
21                  sistant Administrator for NESDIS may enter into  
22                  multiyear agreements necessary to carry out the  
23                  strategy developed under this subsection.

24                  (c) **PILOT PROGRAM.**—

1           (1) CRITERIA.—Not later than December 31,  
2           2015, NOAA shall publish data standards and speci-  
3           fications for space-based commercial weather data.

4           (2) PILOT CONTRACT.—

5                 (A) CONTRACT.—Not later than October  
6                 1, 2016, NOAA shall, through an open competi-  
7                 tion, enter into at least one pilot contract with  
8                 a private sector entity capable of providing data  
9                 that meet the standards and specifications set  
10                by NOAA to provide commercial weather data  
11                in a manner that allows NOAA to calibrate and  
12                evaluate the data.

13               (B) ASSESSMENT OF DATA VIABILITY.—  
14               Not later than October 1, 2019, NOAA shall  
15               transmit to Congress the results of a deter-  
16               mination of the extent to which data provided  
17               under the contract entered into under subpara-  
18               graph (A) meet the criteria published under  
19               paragraph (1).

20           (3) OBTAINING FUTURE DATA.—NOAA shall,  
21           to the extent feasible, obtain commercial weather  
22           data from private sector providers.

23           (4) AUTHORIZATION OF APPROPRIATIONS.—  
24           There are authorized to be appropriated out of funds  
25           made available for procurement, acquisition, and

1 construction at NESDIS, \$9,000,000 for carrying  
2 out this subsection.

3 **SEC. 11. ENVIRONMENTAL INFORMATION SERVICES WORK-**  
4 **ING GROUP.**

5 (a) ESTABLISHMENT.—The NOAA Science Advisory  
6 Board shall continue to maintain a standing working  
7 group named the Environmental Information Services  
8 Working Group (in this section referred to as the “Work-  
9 ing Group”) to—

10 (1) provide advice for prioritizing weather re-  
11 search initiatives at NOAA to produce real improve-  
12 ment in weather forecasting;

13 (2) provide advice on existing or emerging tech-  
14 nologies or techniques that can be found in private  
15 industry or the research community that could be in-  
16 corporated into forecasting at NWS to improve fore-  
17 casting skill;

18 (3) identify opportunities to improve commu-  
19 nications between weather forecasters, Federal,  
20 State, local, tribal, and other emergency manage-  
21 ment personnel, and the public; and to improve com-  
22 munications and partnerships among NOAA and the  
23 private and academic sectors; and

24 (4) address such other matters as the Science  
25 Advisory Board requests of the Working Group.

1 (b) COMPOSITION.—

2 (1) IN GENERAL.—The Working Group shall be  
3 composed of leading experts and innovators from all  
4 relevant fields of science and engineering including  
5 atmospheric chemistry, atmospheric physics, meteor-  
6 ology, hydrology, social science, risk communica-  
7 tions, electrical engineering, and computer sciences.  
8 In carrying out this section, the Working Group may  
9 organize into subpanels.

10 (2) NUMBER.—The Working Group shall be  
11 composed of no fewer than 15 members. Nominees  
12 for the Working Group may be forwarded by the  
13 Working Group for approval by the Science Advisory  
14 Board. Members of the Working Group may choose  
15 a chair (or co-chairs) from among their number with  
16 approval by the Science Advisory Board.

17 (c) ANNUAL REPORT.—The Working Group shall  
18 transmit annually to the Science Advisory Board for sub-  
19 mission to the Under Secretary a report on progress made  
20 by NOAA in adopting the Working Group's recommenda-  
21 tions. The Science Advisory Board shall transmit this re-  
22 port to the Under Secretary. Within 30 days of receipt  
23 of such report, the Under Secretary shall transmit it to  
24 the Committee on Science, Space, and Technology of the

1 House of Representatives and the Committee on Com-  
2 merce, Science, and Transportation of the Senate.

3 **SEC. 12. INTERAGENCY WEATHER RESEARCH AND INNOVA-**  
4 **TION COORDINATION.**

5 (a) ESTABLISHMENT.—The Director of the Office of  
6 Science and Technology Policy shall establish an Inter-  
7 agency Committee for Advancing Weather Services to im-  
8 prove coordination of relevant weather research and fore-  
9 cast innovation activities across the Federal Government.  
10 The Interagency Committee shall—

11 (1) include participation by the National Aero-  
12 nautics and Space Administration, the Federal Avia-  
13 tion Administration, NOAA and its constituent ele-  
14 ments, the National Science Foundation, and such  
15 other agencies involved in weather forecasting re-  
16 search as the President determines are appropriate;

17 (2) identify and prioritize top forecast needs  
18 and coordinate those needs against budget requests  
19 and program initiatives across participating offices  
20 and agencies; and

21 (3) share information regarding operational  
22 needs and forecasting improvements across relevant  
23 agencies.

24 (b) CO-CHAIR.—The Federal Coordinator for Meteor-  
25 ology shall serve as a co-chair of this panel.

1           (c) FURTHER COORDINATION.—The Director shall  
2 take such other steps as are necessary to coordinate the  
3 activities of the Federal Government with those of the  
4 American weather industry, State governments, emer-  
5 gency managers, and academic researchers.

6 **SEC. 13. OAR AND NWS EXCHANGE PROGRAM.**

7           (a) IN GENERAL.—The Assistant Administrator for  
8 OAR and the Assistant Administrator for NWS may es-  
9 tablish a program to detail OAR personnel to the NWS  
10 and NWS personnel to OAR.

11           (b) GOAL.—The goal of this program is to enhance  
12 forecasting innovation through regular, direct interaction  
13 between OAR's world-class scientists and NWS's oper-  
14 ational staff.

15           (c) ELEMENTS.—The program shall allow up to 10  
16 OAR staff and NWS staff to spend up to 1 year on detail.  
17 Candidates shall be jointly selected by the Assistant Ad-  
18 ministrator for OAR and the Assistant Administrator for  
19 NWS.

20           (d) REPORT.—The Under Secretary shall report an-  
21 nually to the Committee on Science, Space, and Tech-  
22 nology of the House of Representatives and to the Com-  
23 mittee on Commerce, Science, and Transportation of the  
24 Senate on participation in such program and shall high-  
25 light any innovations that come from this interaction.

1 **SEC. 14. VISITING FELLOWS AT NWS.**

2 (a) IN GENERAL.—The Assistant Administrator for  
3 NWS may establish a program to host postdoctoral fellows  
4 and academic researchers at any of the National Centers  
5 for Environmental Prediction.

6 (b) GOAL.—This program shall be designed to pro-  
7 vide direct interaction between forecasters and talented  
8 academic and private sector researchers in an effort to  
9 bring innovation to forecasting tools and techniques avail-  
10 able to the NWS.

11 (c) SELECTION AND APPOINTMENT.—Such fellows  
12 shall be competitively selected and appointed for a term  
13 not to exceed 1 year.

14 **SEC. 15. NOAA WEATHER RADIO ALL HAZARDS “MARK**  
15 **TRAIL” AWARD PROGRAM.**

16 (a) PROGRAM.—The Assistant Administrator for  
17 NWS is authorized to establish the NOAA Weather Radio  
18 All Hazards “Mark Trail” Award Program. This award  
19 program shall provide annual awards to honor individuals  
20 or organizations that use or provide NOAA Weather Radio  
21 All Hazards receivers or transmitters to save lives and  
22 protect property. Individuals or organizations that utilize  
23 other early warning tools or applications also qualify for  
24 this award.

25 (b) GOAL.—This award program draws attention to  
26 the life-saving work of the NOAA Weather Radio All Haz-

1 ards program, as well as emerging tools and applications,  
2 that provide real-time warning to individuals and commu-  
3 nities of severe weather or other hazardous conditions.

4 (c) PROGRAM ELEMENTS.—

5 (1) NOMINATIONS.—Nominations for this  
6 award shall be made annually by the Weather Field  
7 Offices to the Assistant Administrator for NWS.  
8 Broadcast meteorologists, weather radio manufactur-  
9 ers and weather warning tool and application devel-  
10 opers, emergency managers and public safety offi-  
11 cials may nominate individuals and/or organizations  
12 to their local Weather Field Offices, but the final list  
13 of award nominees must come from the Weather  
14 Field Offices.

15 (2) SELECTION OF AWARDEES.—Annually, the  
16 Assistant Administrator for NWS shall choose win-  
17 ners of this award whose timely actions, based on  
18 NOAA weather radio all hazards receivers or trans-  
19 mitters or other early warning tools and applica-  
20 tions, saved lives and/or property or demonstrated  
21 public service in support of weather or all hazard  
22 warnings.

23 (3) AWARD CEREMONY.—The Assistant Admin-  
24 istrator for NWS shall establish a means of making  
25 these awards to provide maximum public awareness

1 of the important Weather Radio All Hazards pro-  
2 gram, and such other warning tools and applications  
3 as are represented in the awards.

4 **SEC. 16. DEFINITIONS.**

5 In this Act:

6 (1) AOA.—The term “AOA” means an Anal-  
7 ysis of Alternatives.

8 (2) NESDIS.—The term “NESDIS” means  
9 the National Environmental Satellite, Data, and In-  
10 formation Service.

11 (3) NOAA.—The term “NOAA” means the Na-  
12 tional Oceanic and Atmospheric Administration.

13 (4) NWS.—The term “NWS” means the Na-  
14 tional Weather Service.

15 (5) OAR.—The term “OAR” means the Office  
16 of Oceanic and Atmospheric Research.

17 (6) OSE.—The term “OSE” means an Observ-  
18 ing System Experiment.

19 (7) OSSE.—The term “OSSE” means an Ob-  
20 serving System Simulation Experiment.

21 (8) UNDER SECRETARY.—The term “Under  
22 Secretary” means the Under Secretary of Commerce  
23 for Oceans and Atmosphere.

1 **SEC. 17. AUTHORIZATION OF APPROPRIATIONS.**

2 (a) FISCAL YEAR 2015.—There are authorized to be  
3 appropriated for fiscal year 2015—

4 (1) \$90,800,000 to OAR to carry out this Act,  
5 of which—

6 (A) \$70,000,000 is authorized for weather  
7 laboratories and cooperative institutes; and

8 (B) \$20,800,000 is authorized for weather  
9 and air chemistry research programs; and

10 (2) out of funds made available for research  
11 and development at NOAA, an additional amount of  
12 \$16,000,000 for OAR to carry out the joint tech-  
13 nology transfer initiative described in section  
14 3(b)(4).

15 (b) FISCAL YEARS 2016 AND 2017.—For each of fis-  
16 cal years 2016 and 2017, there are authorized to be ap-  
17 propriated to OAR—

18 (1) \$100,000,000 to carry out this Act, of  
19 which—

20 (A) \$80,000,000 is authorized for weather  
21 laboratories and cooperative institutes; and

22 (B) \$20,000,000 is authorized for weather  
23 and air chemistry research programs; and

24 (2) an additional amount of \$20,000,000 for  
25 the joint technology transfer initiative described in  
26 section 3(b)(4).

1           (c) LIMITATION.—No additional funds are authorized  
2 to carry out this Act, and the amendments made by this  
3 Act.