H.R. 2413, AS AMENDED BY THE SUBCOMMITTEE ON ENVIRONMENT ON JULY 9, 2013

SECTION 1. SHORT TITLE.

This Act may be cited as the ''Weather Forecasting Improvement Act of 2013''.

SEC. 2. PUBLIC SAFETY PRIORITY.

In accordance with the critical responsibility of NOAA to ensure and enhance the provision of data, forecasts, and warnings for the protection of life and property and the enhancement of the national economy, the Under Secretary shall make such weather-related activities the top priority in the planning and management of programs within all relevant line offices.

SEC. 3. WEATHER RESEARCH AND FORECASTING INNOVATION.

(a) PROGRAM.—The Assistant Administrator for OAR shall conduct a program to develop improved understanding of and forecast capabilities for atmospheric events, placing priority on developing more accurate and timely warnings and forecasts of high impact weather events that endanger life and property.

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

(1) Improving the fundamental understanding of weather consistent with section 2, including boundary layer and other atmospheric processes.

(2) Research and development, and transfer of knowledge, technologies, and applications to the NWS and other appropriate agencies and entities, including the American weather industry and academic partners, related to—

(A) advanced radar technologies, including those emphasizing rapid, fine-scale sensing of the boundary layer and the use of innovative, dual-polarization, phased-array technologies;

(B) aerial weather observing systems;

(C) high performance computing and information technology networks;

(D) advanced forecast modeling that improves the timing, track, and intensity forecasts of severe storms, such as tornadoes and hurricanes, and related phenomena, such as storm surge, including through—

(i) more effective use of existing, and the development of new, regional and national cloud-resolving models; and

(ii) enhanced global models;

(E) observing system simulation experiments as described in section 8;

(F) atmospheric chemistry and interactions essential to accurately characterizing atmospheric composition and predicting meteorological processes, including cloud microphysical, precipitation, and atmospheric electrification processes to more effectively understand their role in severe weather; and

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

(3) A technology transfer initiative, carried out jointly and in coordination with the Assistant Administrator for Weather Services, and in cooperation with the American weather industry and academic partners, to ensure continuous development and transition of the latest scientific and technological advances into NWS operations.

(c) ACADEMIC RESEARCH.—In carrying out the program under this section, the Assistant Administrator for OAR shall collaborate with and support the academic weather research community, including by making funds available to institutions of higher education through competitive grants and contracts.

SEC. 4. TORNADO WARNING LEAD TIME EXTENSION PROGRAM.

(a) IN GENERAL.—In carrying out section 3, the Assistant Administrator for OAR shall establish a tornado warning extension program.

(b) GOAL.—The goal of such program shall be to develop and extend accurate tornado forecasts and warnings beyond 1 hour in order to reduce loss of life, injury, and damage to the economy.

(c) PROGRAM PLAN.—Within 180 days after the date of enactment of this Act, the Assistant Administrator for OAR, in consultation with the Assistant Administrator for Weather Services, shall issue a program plan that details the specific research, development, and technology transfer activities, as well as corresponding resources and timelines, necessary to achieve the program goal.

(d) BUDGET FOR PLAN.—Following completion of the plan, the Under Secretary shall transmit annually to Congress a proposed budget corresponding to the activities identified in the plan.

SEC. 5. HURRICANE WARNING PRECISION PROGRAM.

(a) IN GENERAL.—In carrying out section 3, the Assistant Administrator for OAR shall establish a hurricane warning precision program.

(b) GOAL.—The goal of such program shall be to develop and extend accurate hurricane forecasts and warn-

ings in order to reduce loss of life, injury, and damage to the economy.

(c) PROGRAM PLAN.—Within 180 days after the date of enactment of this Act, the Assistant Administrator for OAR, in consultation with the Assistant Administrator for Weather Services, shall issue a program plan that details the specific research, development, and technology transfer activities, as well as corresponding resources and timelines, necessary to achieve the program goal.

(d) BUDGET FOR PLAN.—Following completion of the plan, the Under Secretary shall transmit annually to Congress a proposed budget corresponding to the activities identified in the plan.

SEC. 6. WEATHER RESEARCH AND DEVELOPMENT PLANNING.

Not later than 6 months after the date of enactment of this Act, and annually thereafter, the Assistant Administrator for OAR, in coordination with the Assistant Administrator for Weather Services and the Assistant Administrator for NESDIS, shall issue a plan to restore United States leadership in weather modeling, prediction, and forecasting that—

(1) describes weather technology goals, objectives, and progress of NOAA for the program established under section 3;

(2) identifies and prioritizes specific research and development activities and the associated milestones necessary to achieve such goals and objectives;

(3) describes how the program will collaborate with stakeholders from institutions of higher education and industry in support of program goals and objectives; and

(4) identifies, through consultation with the National Science Foundation, research necessary to enhance the integration of social science knowledge into weather forecast and warning processes, including to improve the communication of threat information necessary to enable improved severe weather planning on the part of individuals and communities.

SEC. 7. OBSERVING SYSTEM PLANNING.

The Under Secretary shall—

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

(2) undertake, using OSEs, OSSEs, and other assessment tools, ongoing systematic evaluations of the combination of observing systems, data, and information needed to meet the requirements devel-

oped under paragraph (1), examining various options to maximize observational capabilities and their cost-effectiveness;

(3) identify current and potential future data gaps in observing capabilities related to the requirements under paragraph (1); and

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

SEC. 8. OBSERVING SYSTEM SIMULATION EXPERIMENTS.

(a) IN GENERAL.—In support of the requirements of section 7, the Assistant Administrator for OAR shall undertake OSSEs to quantitatively assess the relative value and benefits of observing capabilities and systems. Technical and scientific OSSE evaluations—

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

(A) global weather prediction;

(B) hurricane track and intensity forecasting;

(C) tornado warning lead times and accuracy; and

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

(2) should be conducted in cooperation with other appropriate entities within NOAA, other Fed-

eral agencies, the American weather industry, and academic partners.

(b) REQUIREMENTS.—OSSEs shall quantitatively—

(1) determine the potential impact of proposed space-based, sub-orbital, and in-situ observing systems on analyses and forecasts;

(2) evaluate and compare observing system design options; and

(3) assess the relative capabilities and costs of various observing systems and combinations of observing systems in providing data necessary to protect life and property.

(c) IMPLEMENTATION.—OSSEs—

(1) shall be conducted prior to the acquisition of major Government-owned or Government-leased operational observing systems, including polar-orbiting and geostationary satellite systems; and

(2) shall be conducted prior to the purchase of any major new commercially provided data.

(d) PRIORITY OSSEs.—Not later than June 30, 2014, the Assistant Administrator for OAR shall complete OSSEs to assess the value of data from both Global Positioning System radio occultation and a geostationary hyperspectral sounder global constellation.

(e) RESULTS.—All OSSE results shall be publicly released and fully considered by NOAA for implementation.

SEC. 9. COMPUTING RESOURCES PRIORITIZATION REPORT.

Not later than 6 months after the date of enactment of this Act, and annually thereafter, the NOAA Chief Information Officer, in coordination with the Assistant Administrator for OAR and the Assistant Administrator for Weather Services, shall issue a plan for high performance computing support of its advanced research and operational weather prediction models that—

(1) assures that NOAA aggressively pursues the newest, fastest, and most cost effective high performance computing technologies in support of its weather prediction mission;

(2) assures a balance between the research requirements to develop the next generation of regional and global models and its highly reliable operational models;

(3) takes advantage of advanced development concepts to make its next generation weather prediction models available in beta-test mode to NOAA's operational forecasters, the American weather industry, and its partners in academic and government research; and

(4) identifies opportunities to reallocate existing advanced computing resources from lower priority uses to improve operational weather prediction.

SEC. 10. COMMERCIAL WEATHER DATA.

(a) AMENDMENT.—Section 60161 of title 51, United States Code, is amended by adding at the end the following: ''This prohibition shall not extend to—

''(1) the purchase of weather data through contracts with commercial providers; or

''(2) the placement of weather satellite instruments on cohosted government or private payloads.''.

(b) REPORT.—Within 6 months after the date of enactment of this Act, the Under Secretary shall submit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report assessing the range of commercial opportunities for obtaining space-based weather observations, including the cost-effectiveness of these opportunities, and providing a plan for procuring data from these non-governmental sources.

SEC. 11. DEFINITIONS.

In this Act:

(1) NESDIS.—The term ''NESDIS'' means the National Environmental Satellite, Data, and Information Service.

(2) NOAA.—The term ''NOAA'' means the National Oceanic and Atmospheric Administration.

(3) NWS.—The term ''NWS'' means the National Weather Service.

(4) OAR.—The term ''OAR'' means the Office of Oceanic and Atmospheric Research.

(5) OSE.—The term ''OSE'' means an Observing System Experiment.

(6) OSSE.—The term ''OSSE'' means an Observing System Simulation Experiment.

(7) UNDER SECRETARY.—The term ''Under Secretary'' means the Under Secretary of Commerce for Oceans and Atmosphere.

SEC. 12. AUTHORIZATION OF APPROPRIATIONS.

Out of funds made available for operations, research, and facilities in OAR, there are authorized to be appropriated for each of fiscal years 2014 through 2017—

(1) $100,000,000 to carry out section 3, of which—

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

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

(2) $20,000,000 for the joint technology transfer initiative described in section 3(b)(3).

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