AMENDMENT NO._____ Calendar No._____

Purpose: In the nature of a substitute.

IN THE SENATE OF THE UNITED STATES—119th Cong., 2d Sess.

S. 3923

To improve the weather research of the National Oceanic and Atmospheric Administration, support improvements in weather forecasting and prediction, and expand commercial opportunities for the provision of weather data.

Referred to the Committee on _____ and ordered to be printed

Ordered to lie on the table and to be printed

AMENDMENT IN THE NATURE OF A SUBSTITUTE intended to be proposed by Mr. CRUZ (for himself, Ms. CANTWELL, Mr. SULLIVAN, Ms. BLUNT ROCHESTER, Mr. MORAN, Mr. SCHATZ, Mr. SHEEHY, Ms. ROSEN, Mr. BUDD, Ms. KLOBUCHAR, Mr. CURTIS, and Mr. HICKENLOOPER)

Viz:

Strike all after the enacting clause and insert the following:

SECTION 1. SHORT TITLE; TABLE OF CONTENTS.

(a) SHORT TITLE.—This Act may be cited as the ''Weather Research and Forecasting Innovation Reauthorization Act of 2026''.

(b) TABLE OF CONTENTS.—The table of contents for this Act is as follows:

Sec. 1. Short title; table of contents.

Sec. 2. Definitions.

TITLE I—REAUTHORIZATION OF THE WEATHER RESEARCH AND FORECASTING INNOVATION ACT OF 2017

Sec. 101. Public safety priority.
Sec. 102. United States weather research and forecasting.
Sec. 103. Verification of the Origins of Rotation in Tornadoes Experiment–United States of America (VORTEX–USA).
Sec. 104. Hurricane forecast improvement program.
Sec. 105. Tsunami Warning and Education Act reauthorization.
Sec. 106. Observing system planning.
Sec. 107. Observing system simulation experiments.
Sec. 108. Computing resources prioritization.
Sec. 109. Earth Prediction Innovation Center.
Sec. 110. Satellite architecture planning.
Sec. 111. Improving uncrewed activities.
Sec. 112. Interagency Council for Advancing Meteorological Services.
Sec. 113. Ocean observations.
Sec. 114. Consolidation of reports.
Sec. 115. Precipitation forecast improvement program.

TITLE II—ENHANCING FEDERAL WEATHER FORECASTING AND INNOVATION

Sec. 201. Next-generation numerical weather prediction initiative.
Sec. 202. Radar Next Program.
Sec. 203. Data voids in under-observed areas of the United States.
Sec. 204. Radar innovation for the next generation.
Sec. 205. Atmospheric rivers forecast improvement program.
Sec. 206. Coastal flooding and storm surge forecast improvement program.
Sec. 207. Improving prevention and responses to temperature related impacts.
Sec. 208. Aviation weather and data innovation.
Sec. 209. Aerial snow survey program.
Sec. 210. National Environmental Satellite, Data, and Information Service partnership program, transition program, and operational planning.
Sec. 211. Advanced Weather Interactive Processing System.
Sec. 212. Reanalysis and reforecasting.
Sec. 213. National Weather Service workforce.
Sec. 214. Consultation relating to modernization and reorganization.
Sec. 215. Artificial intelligence for weather forecasting.
Sec. 216. Composition of the atmosphere and atmospheric observations.
Sec. 217. Project to improve forecasts of coastal marine fog.
Sec. 218. Modernization of NWS alerting systems.

TITLE III—COMMERCIAL WEATHER AND ENVIRONMENTAL OBSERVATIONS

Sec. 301. Commercial Data Program.
Sec. 302. Commercial Data Pilot Program.
Sec. 303. Contracting authority and avoidance of duplication.
Sec. 304. Data assimilation, management, and sharing practices.
Sec. 305. Clerical amendment.

TITLE IV—COMMUNICATING WEATHER TO THE PUBLIC

Sec. 401. Definitions.
Sec. 402. Hazardous weather or water event risk communication.
Sec. 403. Hazard communication research and engagement.
Sec. 404. NOAA Weather Radio.
Sec. 405. National standards for weather warning systems in flash flood zones.
Sec. 406. Post-storm surveys and assessments.
Sec. 407. Government Accountability Office report on alert dissemination for hazardous weather or water events.
Sec. 408. Data collection, management, and protection.

TITLE V—IMPROVING WEATHER INFORMATION FOR AGRICULTURE AND WATER MANAGEMENT

Sec. 501. Weather information for agriculture and water management.
Sec. 502. National Integrated Drought Information System.
Sec. 503. National Mesonet Program.
Sec. 504. National Coordinated Soil Moisture Monitoring Network.
Sec. 505. National Water Center.

TITLE VI—HARMFUL ALGAL BLOOM AND HYPOXIA RESEARCH AND CONTROL

Sec. 601. Amendments to the Harmful Algal Bloom and Hypoxia Research and Control Act of 1998.
Sec. 602. Other harmful algal bloom and hypoxia matters.

TITLE VII—FIRE READY NATION

Sec. 701. Definitions.
Sec. 702. Establishment of fire weather services program.
Sec. 703. Fire weather testbed.
Sec. 704. Data management and technology modernization.
Sec. 705. Surveys and assessments.
Sec. 706. Incident Meteorologist Service.
Sec. 707. Emergency response activities.
Sec. 708. Submissions to Congress regarding the Fire Weather Services Program, incident meteorologist workforce needs, and National Weather Service workforce support.
Sec. 709. Fire Weather Science and Technology Working Group; strategic plan.
Sec. 710. Fire weather rating system.
Sec. 711. Government Accountability Office reports.
Sec. 712. Cooperation and coordination.
Sec. 713. General provisions.
Sec. 714. Authorization of appropriations.

TITLE VIII—PRECIPITATION ESTIMATES AND LANDSLIDE PREPAREDNESS

Sec. 801. Inclusion of atmospheric rivers and extreme precipitation events in estimates of precipitation frequency.
Sec. 802. Reauthorization of National Landslide Preparedness Act.
Sec. 803. Next Generation Water Observing System.
Sec. 804. Water data enhancement and national groundwater resources monitoring by United States Geological Survey.

TITLE IX—IMPROVING CYBERSECURITY AND TELECOMMUNICATIONS FOR OCEANIC RESEARCH

Sec. 901. Definitions.
Sec. 902. Plan to improve cybersecurity and telecommunications of U.S. Academic Research Fleet.

TITLE X—INTEGRATED OCEAN OBSERVATION SYSTEM REAUTHORIZATION ACT OF 2026

Sec. 1001. Short title.
Sec. 1002. Purposes.
Sec. 1003. Definitions.
Sec. 1004. Integrated Coastal and Ocean Observing System.
Sec. 1005. Report to Congress.
Sec. 1006. Authorization of appropriations.
Sec. 1007. Conforming amendments.

TITLE XI—OTHER AUTHORITIES

Sec. 1101. Relocation allowances.
Sec. 1102. Unfunded priorities list, reports, and plans.
Sec. 1103. Meteorological observations in the Arctic region.
Sec. 1104. Transfer of excess property of the National Oceanic and Atmospheric Administration.
Sec. 1105. Miscellaneous authorities.

SEC. 2. DEFINITIONS.

(a) IN GENERAL.—In this Act, the terms ''seasonal'', ''State'', ''subseasonal'', ''Under Secretary'', ''weather enterprise'', ''weather data'', and ''weather industry'' have the meanings given such terms in section 2 of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8501).

(b) WEATHER DATA DEFINED.—Section 2 of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8501) is amended—

(1) by redesignating paragraph (5) as paragraph (6); and

(2) by inserting after paragraph (4) the following:

''(5) WEATHER DATA.—The term 'weather data' means information used to track and predict weather conditions and patterns, including forecasts, observations, and derivative products from such information.''.

TITLE I—REAUTHORIZATION OF THE WEATHER RESEARCH AND FORECASTING INNOVATION ACT OF 2017

SEC. 101. PUBLIC SAFETY PRIORITY.

Section 101 of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8511) is amended to read as follows:

''SEC. 101. PUBLIC SAFETY PRIORITY.

''(a) IN GENERAL.—The Under Secretary shall ensure the National Oceanic and Atmospheric Administration remains focused on providing accurate and timely weather forecasts that protect lives and property and enhance the national economy, including by—

''(1) coordinating and modernizing observational infrastructure, weather forecasting systems, communications, and impact-based decision support services; and

''(2) improving operational weather forecasts, products, and services.

''(b) RESEARCH.—In conducting research, the Under Secretary shall prioritize improving weather data, modeling, computing, forecasting, and warnings and support transition of advancements into operational forecasting and services, for the protection of life and property and for the enhancement of the national economy.''.

SEC. 102. UNITED STATES WEATHER RESEARCH AND FORECASTING.

Section 110 of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8519) is amended to read as follows:

''SEC. 110. AUTHORIZATION OF APPROPRIATIONS.

''(a) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Office of Oceanic and Atmospheric Research to carry out this title the following:

''(1) $166,736,000 for fiscal year 2027, of which—

''(A) $94,000,000 is authorized for weather laboratories and cooperative institutes;

''(B) $39,491,000 is authorized for the United States Weather Research Program;

''(C) $21,125,000 is authorized for tornado, severe storm, and next generation radar research; and

"(D) $12,120,000 is authorized for the joint technology transfer initiative described in section 102(b)(4) of this title.

"(2) $168,403,000 for fiscal year 2028, of which—

"(A) $94,940,000 is authorized for weather laboratories and cooperative institutes;

"(B) $39,886,000 is authorized for the United States Weather Research Program;

"(C) $21,336,000 is authorized for tornado, severe storm, and next generation radar research; and

"(D) $12,241,000 is authorized for the joint technology transfer initiative described in section 102(b)(4) of this title.

"(3) $170,089,000 for fiscal year 2029, of which—

"(A) $95,890,000 is authorized for weather laboratories and cooperative institutes;

"(B) $40,285,000 is authorized for the United States Weather Research Program;

"(C) $21,550,000 is authorized for tornado, severe storm, and next generation radar research; and

"(D) $12,364,000 is authorized for the joint technology transfer initiative described in section 102(b)(4) of this title.

"(4) $171,789,000 for fiscal year 2030, of which—

"(A) $96,849,000 is authorized for weather laboratories and cooperative institutes;

"(B) $40,688,000 is authorized for the United States Weather Research Program;

"(C) $21,765,000 is authorized for tornado, severe storm, and next generation radar research; and

"(D) $12,487,000 is authorized for the joint technology transfer initiative described in section 102(b)(4) of this title.

"(5) $173,506,000 for fiscal year 2031, of which—

"(A) $97,817,000 is authorized for weather laboratories and cooperative institutes;

"(B) $41,094,000 is authorized for the United States Weather Research Program;

"(C) $21,983,000 is authorized for tornado, severe storm, and next generation radar research; and

''(D) $12,612,000 is authorized for the joint technology transfer initiative described in section 102(b)(4) of this title.

''(b) LIMITATION.—No additional funds are authorized to carry out this title or the amendments made by this title.''.

SEC. 103. VERIFICATION OF THE ORIGINS OF ROTATION IN TORNADOES EXPERIMENT–UNITED STATES OF AMERICA (VORTEX–USA).

(a) IN GENERAL.—Section 103 of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8513) is amended to read as follows:

''SEC. 103. VERIFICATION OF THE ORIGINS OF ROTATION IN TORNADOES EXPERIMENT–UNITED STATES OF AMERICA (VORTEX–USA).

''(a) IN GENERAL.—The Under Secretary, in collaboration with the United States weather industry and academic partners, shall maintain a program for rapidly improving tornado forecasts, predictions, and warnings.

''(b) GOAL.—The goal of the program under subsection (a) shall be to develop and extend accurate tornado forecasts, predictions, and warnings in order to reduce the loss of life or property related to tornadoes, with a focus on the following:

''(1) Forecaster training in radar interpretation and information integration from new sources.

''(2) Improving the effectiveness and timeliness of tornado forecasts, predictions, and warnings, including with respect to—

''(A) tornado formation from fast-developing storm systems, such as derechos;

''(B) areas that have historically experienced lower tornado frequency; and

''(C) tornado formation at night.

''(3) Optimizing lead time and providing actionable information beyond one hour in advance.

''(4) Transitioning from warn-on-detection to warn-on-forecast.

''(c) INNOVATIVE OBSERVATIONS.—The Under Secretary shall ensure the program under subsection (a) periodically examines, tests, and evaluates the value of incorporating innovative observations, such as novel sensor technologies, observation tools or networks, crewed or uncrewed systems, and hosted instruments on commercial aircraft, vessels, and satellites, with respect to the improvement of tornado forecasts, predictions, and warnings.

''(d) ACTIVITIES.—The Under Secretary shall award grants for research, including relating to the following:

''(1) Implementing key goals and achieving program milestones to the maximum extent practicable, as outlined by the National Oceanic and Atmospheric Administration's 2019 report entitled, 'Tornado Warning Improvement and Extension Program Plan'.

''(2) In coordination with the Social and Behavioral Sciences Subcommittee of the National Science and Technology Council, improving the social, behavioral and economic sciences regarding risk communication, and delivery of information critical for reducing the loss of life or property related to tornadoes.

''(3) Improving the physical sciences, computer modeling, and tools related to tornado formation, the impacts of tornadoes on the built and natural environment, and the interaction of tornadoes and hurricanes.

''(e) PRIORITY INSTITUTIONS.—

''(1) IN GENERAL.—In awarding grants under subsection (d), the Under Secretary shall give priority to eligible institutions selected through a competitive, merit-based process.

''(2) ELIGIBLE INSTITUTION DEFINED.—In this subsection, the term 'eligible institution' means any of the following:

''(A) An institution that is frequently subjected to severe weather, such as tornadoes, hurricanes, or floods.

''(B) An institution of higher education in close proximity to a Weather Forecast Office of the National Weather Service.

''(f) WARNINGS.—In carrying out subsection (a), the Under Secretary, in coordination with the program established under section 403(a) of the Weather Research and Forecasting Innovation Reauthorization Act of 2026, shall—

''(1) conduct and transition to operations the research necessary to develop and deploy probabilistic weather forecast guidance technology for tornadoes and related weather phenomena;

''(2) incorporate into tornado modeling and forecasting, as appropriate, social, behavioral, risk, communication, and economic sciences;

''(3) enhance workforce training on radar interpretation and use of tornado warning systems; and

''(4) expand computational resources to support higher-resolution modeling to advance the capability for warn-on-forecast.

''(g) TORNADO RATING SYSTEM.—The Under Secretary, in collaboration with local communities and emergency managers, shall—

''(1) evaluate the system used as of the date of enactment of the Weather Research and Forecasting Innovation Reauthorization Act of 2026 to rate the severity of tornadoes;

''(2) determine whether updates to such system are required to ensure such ratings accurately reflect the severity of tornadoes; and

''(3) if determined necessary, update such system.

''(h) ANNUAL BUDGET.—The Under Secretary shall submit to Congress, with the budget of the President submitted under section 1105 of title 31, United States Code, for a fiscal year, a proposed budget for activities to carry out this section in that fiscal year.

''(i) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated to the Under Secretary to carry out this section $11,000,000 for each of fiscal years 2027 through 2031, of which not less than $2,000,000

each fiscal year shall be used for grants awarded to institutions under subsection (e).''.

(b) CLERICAL AMENDMENT.—The table of contents in section 1(b) of the Weather Research and Forecasting Innovation Act of 2017 is amended by amending the item relating to section 103 to read as follows:

''Sec. 103. Verification of the Origins of Rotation in Tornadoes Experiment–United States of America (VORTEX–USA).''.

SEC. 104. HURRICANE FORECAST IMPROVEMENT PROGRAM.

Section 104 of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8514) is amended to read as follows:

''SEC. 104. HURRICANE FORECAST IMPROVEMENT PROGRAM.

''(a) IN GENERAL.—The Under Secretary, in collaboration with the United States weather industry and academic partners, shall maintain a program to improve hurricane forecasting, predictions, and warnings.

''(b) GOAL.—The goal of the program under subsection (a) shall be to develop and extend accurate hurricane forecasts, predictions, and warnings in order to reduce the loss of life or property related to hurricanes, with a focus on the following:

''(1) Improving the understanding, prediction, and communication of rapid intensity change and

projected path of hurricanes, including probabilistic methods for hurricane hazard mapping.

''(2) Improving the forecast and impact-based communication of inland flooding, compound flooding, and storm surges from hurricanes, in coordination with the program established under section 206 of the Weather Research and Forecasting Innovation Reauthorization Act of 2026.

''(3) Incorporating social, behavioral, risk, communication, and economic sciences to clearly inform response to prevent the loss of life or property.

''(4) Evaluating and incorporating, as appropriate, innovative observations, including acoustic or infrasonic measurements, novel sensor technologies, observation tools or networks, crewed or uncrewed systems, and hosted instruments on commercial aircraft, vessels, and satellites.

''(c) ACTIVITIES.—The Under Secretary shall award grants for research, including relating to the following:

''(1) Implementing key strategies and following priorities and objectives outlined by the National Oceanic and Atmospheric Administration's 2019 report entitled, 'Hurricane Forecast Improvement Program'.

''(2) In coordination with the Social and Behavioral Sciences Subcommittee of the National Science and Technology Council and other relevant interagency committees, improving the social, behavioral, and economic sciences related to risk communication, and delivery of information critical for reducing the loss of life or property related to hurricanes.

''(3) Improving the physical sciences, operational modeling, and tools related to hurricane formation, the impacts of wind and water-based hurricane hazards on the built and natural environment, and the interaction of hurricanes and tornadoes.

''(d) WARNINGS.—In carrying out subsection (a), the Under Secretary, in coordination with the program established under section 403(a) of the Weather Research and Forecasting Innovation Reauthorization Act of 2026, shall—

''(1) conduct and transition to operations the research necessary to develop and deploy probabilistic weather forecast guidance technology relating to hurricanes and related weather phenomena;

''(2) incorporate into hurricane modeling and forecasting, as appropriate, social, behavioral, and economic sciences research; and

''(3) expand computational resources to support and improve higher resolution operational modeling of hurricanes and related weather phenomena.

''(e) ANNUAL REPORT.—Not later than June 1 of each year until 2030, the Under Secretary, in consultation with the Secretary of Defense, 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 that includes the following:

''(1) The number and causes of missed mission requirements for the National Hurricane Operations Plan and the National Winter Season Operations Plan, including those related to equipment malfunction, aircraft availability, aircraft maintenance, flight hour limits, and availability of pilots or other air and maintenance crew members.

''(2) Requirements related to the plans described in paragraph (1) that were requested by forecasters but not tasked, and the reasons why those were not tasked.

''(3) A workforce management plan addressing any shortfalls in human capital resources that are necessary for hurricane observational data collection aboard aircraft or uncrewed systems.

''(4) A summary of—

''(A) hurricane technology that is under research and development to improve confidence in hurricane track and intensity predictions;

''(B) hurricane technology that is at the prototype demonstration stage or beyond; and

''(C) plans for transitioning the hurricane technology described in subparagraph (B) into operations.

''(f) ANNUAL BUDGET.—The Under Secretary shall submit to Congress, with the budget of the President submitted under section 1105 of title 31, United States Code, for a fiscal year, a proposed budget for activities to carry out this section in that fiscal year.''.

SEC. 105. TSUNAMI WARNING AND EDUCATION ACT REAUTHORIZATION.

(a) TITLE HEADING; DEFINITIONS.—

(1) TITLE HEADING.—The Tsunami Warning and Education Act (enacted as title VIII of the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006 (Public Law 109–479)) is amended in the title heading for title VIII, by inserting '', **RESEARCH,**'' after ''**WARNING**''.

(2) DEFINITIONS.—Section 802 of the Tsunami Warning and Education Act (33 U.S.C. 3201) is amended by adding at the end the following:

''(3) The term 'Indian Tribe' has the meaning given the term in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 5304).

''(4) The term 'Native Hawaiian organization' has the meaning given the term in section 6207 of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 7517), except that the term includes the Department of Hawaiian Home Lands and the Office of Hawaiian Affairs.

''(5) The term 'Tribal organization' has the meaning given the term in section 4 of the Indian Self-Determination and Education Assistance Act.

''(6) The term 'tsunami' means a series of waves that is caused by a tsunamigenic event.

''(7) The term 'tsunamigenic event' means any event, such as an earthquake, volcanic eruption, submarine landslide, coastal rockfall, or other event, with the magnitude to cause a tsunami.''.

(b) PURPOSES.—Section 803 of the Tsunami Warning and Education Act (33 U.S.C. 3202) is amended—

(1) in paragraph (2), by inserting ''timeliness and'' before ''accuracy'';

(2) in paragraph (7), by striking ''and'' after the semicolon;

(3) by amending paragraph (8) to read as follows:

''(8) to improve coordination for detection, warnings, and outreach for tsunami and other coastal impacts with Federal, State, and international partners, and Indian Tribes, Tribal organizations, and Native Hawaiian organizations; and'';

(4) by adding at the end the following:

''(9) to ensure data and metadata are managed, archived, and made available for operations, research, education, and mitigation activities in accordance with section 305 of the Weather Research and Forecasting Innovation Act of 2017.''.

(c) TSUNAMI FORECASTING AND WARNING PROGRAM.—Section 804 of the Tsunami Warning and Education Act (33 U.S.C. 3203) is amended—

(1) in subsection (a), by striking ''the Pacific and Arctic Ocean regions and for the Atlantic Ocean region, including the Caribbean Sea and the Gulf of Mexico'' and inserting ''the United States and its territories'';

(2) in subsection (b)—

(A) in paragraph (1), by striking ''subsection (d)'' and inserting ''subsection (e)'';

(B) in paragraph (2), by inserting '', or a successor system,'' after ''buoy array'';

(C) in paragraph (4), by inserting '', using industry and scientific best practices,'' after ''operational condition'';

(D) in paragraph (5)—

(i) in subparagraph (C), by striking ''global seismic network'' and inserting ''Global Seismic Network'';

(ii) by redesignating subparagraphs (D) through (F) and subparagraph (G) as subparagraphs (E) through (G) and subparagraph (I), respectively;

(iii) by inserting after subparagraph (C) the following:

''(D) the global navigation satellite system network;'';

(iv) in subparagraph (G), as so redesignated, by striking ''; and'' and inserting a semicolon; and

(v) by inserting after subparagraph (G), as so redesignated, the following:

''(H) tidal gauges, water level gauges, and buoys; and'';

(E) by amending paragraph (6) to read as follows:

''(6) ensure data quality and management systems support data and metadata access and archiving;'';

(F) in paragraph (7)—

(i) by amending the matter preceding subparagraph (A) to read as follows: ''include a cooperative effort among the Administration, the United States Geological Survey, the National Aeronautics and Space Administration, and the National Science Foundation under which the Director of the United States Geological Survey, the Director of the National Science Foundation, and the Administrator of the National Aeronautics and Space Administration shall—'';

(ii) in subparagraph (A), by striking ''and'' at the end;

(iii) by amending subparagraph (B) to read as follows:

''(B) support operators of seismic stations installed before the date of enactment of the Weather Research and Forecasting Innovation Reauthorization Act of 2026 that supplement coverage areas of sparse instrumentation, with a focus on the most seismically active States and on stations with multi-State benefits;''; and

(iv) by adding at the end the following:

''(C) provide support for the global navigation satellite system network data streams from such agencies, and supplement instrumentation coverage for rapid earthquake assessment; and

''(D) assess the data and information of such agencies for potential use in the Administration's warning system;'';

(G) by redesignating paragraphs (8) through (10) as paragraphs (9) through (11), respectively;

(H) by inserting after paragraph (7) the following:

''(8) include a cooperative effort between the Administration and the United States Geological Survey to assess additional methods of rapid delivery for tsunami notifications and warnings, including via

the Earthquake Early Warning System of the United States Geological Survey;'';

(I) in paragraph (9), as so redesignated—

(i) by striking ''graphical warning products, to at-risk States, territories, and tsunami communities'' and inserting ''graphical warning products and decision support tools, to communities at risk of tsunami''; and

(ii) by striking ''utilization'' and inserting ''use'';

(J) in paragraph (10), as so redesignated, by striking ''and'' after the semicolon;

(K) in paragraph (11), as so redesignated, by striking the period and inserting ''; and''; and

(L) by adding at the end the following:

''(12) update inundation maps, models, or other geographic products, in order to best support, as appropriate, relevant agencies with tsunami mitigation and recovery activities.'';

(3) in subsection (c)—

(A) by striking paragraph (1) and redesignating paragraphs (2) and (3) as paragraphs (1) and (2), respectively; and

(B) by amending paragraph (1), as so redesignated, to read as follows:

''(1) is capable of forecasting and providing adequate warnings, including tsunami arrival time, alert levels, and inundation models where applicable, for the United States and its territories; and'';

(4) by redesignating subsections (d), (e), (f), and (g) as subsections (e), (f), (g), and (h), respectively;

(5) by inserting after subsection (c) the following:

''(d) TSUNAMI WARNING ALERT LEVEL EVALUATION.—Not later than 1 year after the date of enactment of the Weather Research and Forecasting Innovation Reauthorization Act of 2026, the Administrator, in collaboration with social scientists, Federal, State, and local emergency personnel, Indian Tribes, Tribal organizations, Native Hawaiian organizations, and high-risk communities, shall—

''(1) evaluate tsunami alert levels terminology, timing, and effectiveness;

''(2) determine if such alerts produce the desired response and understanding from possible tsunami-prone communities;

''(3) if necessary, update the alert level system for increased effectiveness; and

''(4) provide 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 briefing on the activities under this subsection.'';

(6) in subsection (e), as so redesignated—

(A) in paragraph (1)—

(i) in the matter preceding subparagraph (A), by striking ''Centers shall'' and inserting ''centers shall'';

(ii) in subparagraph (A), by striking '', which is primarily responsible for Alaska and the continental United States''; and

(iii) in subparagraph (B), by striking '', which is primarily responsible for Hawaii, the Caribbean, and other areas of the Pacific not covered by the National Center'';

(B) in paragraph (2)—

(i) in subparagraph (A), by inserting ''current, surface and ground water level,'' after ''sea level,'';

(ii) by amending subparagraph (B) to read as follows:

''(B) Evaluating tsunamigenic sources.'';

(iii) in subparagraph (C), by striking ''buoy data and tidal'' and inserting ''and coastal'';

(iv) in subparagraph (E), by striking ''Integrated Ocean Observing System of the Administration'' and inserting ''United States and global ocean and coastal observing systems'';

(v) in subparagraph (F), by striking ''Federal, State, tribal, and local government officials'' and inserting ''Federal, State, and local government officials, Indian Tribes, Tribal organizations, Native Hawaiian organizations,'';

(vi) by redesignating subparagraphs (G) and (H) and subparagraphs (I) and (J) as subparagraphs (H) and (I) and subparagraphs (K) and (L), respectively;

(vii) by inserting after subparagraph (F) the following:

''(G) Providing a Tsunami Warning Coordinator at each center supported or maintained

under paragraph (1) to coordinate with partners and stakeholders on products and services provided by each such center.'';

(viii) in subparagraph (I), as so redesignated, by inserting ''monitoring needs,'' after ''response,'';

(ix) by inserting after subparagraph (I), as so redesignated, the following:

''(J) Updating, as appropriate, forecast points, breakpoints, and special procedure areas.''; and

(x) by adding at the end the following:

''(M) Conducting, not less than annually, a tsunami warning drill with Federal, State, and local emergency managers, and emergency managers of Indian Tribes, Tribal organizations, and Native Hawaiian organizations.'';

(C) by amending paragraph (3) to read as follows:

''(3) FAIL-SAFE WARNING CAPABILITY.—

''(A) IN GENERAL.—The Administrator shall support and maintain fail-safe warning capability for the tsunami warning centers supported or maintained under paragraph (1).

''(B) SERVICE BACK-UP DRILLS.—Not less than biannually, such centers shall conduct a service back-up drill to ensure they are able to perform back-up duties for each other.'';

(D) in paragraph (4)—

(i) by amending the matter preceding subparagraph (A) to read as follows: ''The Administrator shall coordinate with the weather forecast offices of the National Weather Service, the centers supported or maintained under paragraph (1), and such national and regional program offices of the Administration as the Administrator or the coordinating committee, as established in section 805(b), consider appropriate to ensure that regional and local weather forecast offices—'';

(ii) in subparagraph (B), by striking ''and'' after the semicolon;

(iii) in subparagraph (C), by striking the period and inserting ''; and''; and

(iv) by adding at the end the following:

''(D) conduct education and outreach efforts to help prepare coastal communities for tsunami hazards.'';

(E) in paragraph (5)—

(i) in the paragraph heading, by striking ''UNIFORM'' and inserting ''STANDARDIZED'';

(ii) in subparagraph (B), by redesignating clauses (i) through (iii) as subclauses (I) through (III), respectively, and adjusting the margins accordingly;

(iii) in subparagraph (C), by redesignating clauses (i) and (ii) as subclauses (I) and (II), respectively, and adjusting the margins accordingly;

(iv) by redesignating subparagraphs (A) through (E) as clauses (i) through (v), respectively, and adjusting the margins accordingly;

(v) by striking ''The Administrator'' and inserting the following:

''(A) IN GENERAL.—The Administrator'';

(vi) in clause (i), as so redesignated, by striking ''uniform'' and inserting ''standardized'';

(vii) in clause (iii)(II), as so redesignated, by striking ''uniform'' and inserting ''standardized'';

(viii) in clause (iv), as so redesignated, by striking ''; and'' and inserting a semicolon;

(ix) in clause (v), as so redesignated, by striking the period and inserting ''; and'';

(x) by adding after clause (v), as so redesignated, the following:

''(vi) align the analytic techniques and methodologies of the existing tsunami warning centers supported or maintained under paragraph (1) to ensure continuity of operations and mitigate risk of operational failure by prioritizing investments that include—

''(I) replacing end of life equipment;

''(II) ensuring product consistency;

''(III) enabling consistent operational process for backup capabilities;

''(IV) mitigating existing operational security risks; and

''(V) meeting information security requirements specified in chapter 35 of title 44, United States Code.''; and

(xi) by adding at the end the following:

''(B) REGIONAL DIFFERENCES.—Notwithstanding subparagraph (A), the Administrator shall allow for regional differences with respect to the communication methods and decision support tools used by the centers supported or maintained under paragraph (1) in order to account for the unique needs of the community served by such centers, provided such regional differences do not undermine performance.'';

(F) in paragraph (6), in the first sentence, by inserting '', including personnel,'' after ''resources''; and

(G) by adding at the end the following:

''(7) REPORTING.—Not later than 180 days after the date of the enactment of this paragraph and annually thereafter for 3 years, the Administrator shall provide 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 briefing on the progress and expected timelines of the following:

''(A) Standardizing products and procedures under paragraph (5), including tsunami assessments, forecast guidance, and related products.

''(B) Migrating the message generation systems of the centers supported or maintained under paragraph (1) to the Advanced Weather Interactive Processing System, or successor systems.

''(C) Any structural reorganization efforts as may be necessary following the enactment of the Weather Research and Forecasting Innovation Reauthorization Act of 2026.

''(D) Such centers conducting drills required under paragraphs (2)(M) and (3)(B).'';

(7) in subsection (f), as so redesignated—

(A) in paragraph (1)—

(i) in the matter preceding subparagraph (A), by inserting ''detect, measure, and'' after ''used to'';

(ii) in subparagraph (B), by striking ''; and'' and inserting a semicolon;

(iii) in subparagraph (C)—

(I) by striking ''and the Advanced National Seismic System;'' and inserting ''the Advanced National Seismic System, and the global navigation satellite system;''; and

(II) by adding ''and'' after the semicolon; and

(iv) by adding at the end the following:

''(D) by ensuring research is coordinated with tsunami warning operations;''; and

(8) in subsection (h)(2), as so redesignated—

(A) in subparagraph (A), by striking ''accuracy of the tsunami model used'' and inserting ''accuracy and timeliness of the tsunami model and forecast used''; and

(B) in subparagraph (C)—

(i) by inserting ''and timeliness'' after ''effectiveness''; and

(ii) by striking ''local, and tribal partners'' and inserting ''and local partners,

Indian Tribes, Tribal organizations, and Native Hawaiian organizations''.

(d) ASSESSMENT OF TSUNAMI WATCHES AND WARNINGS.—

(1) IN GENERAL.—The Tsunami Warning and Education Act (enacted as title VIII of the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006 (Public Law 109–479)) is amended by inserting after section 804 (33 U.S.C. 3203) the following:

''SEC. 804A. ASSESSMENT OF TSUNAMI WATCHES AND WARNINGS.

''(a) ASSESSMENT OF TSUNAMI WATCHES AND WARNINGS.—

''(1) IN GENERAL.—Not later than 2 years after the date of the enactment of this section, the Under Secretary shall—

''(A) conduct an assessment of—

''(i) the tsunami watches and warnings of the National Weather Service; and

''(ii) the information delivery to support preparation and responses to tsunamis; and

''(B) submit to the Committee on Science, Space, and Technology of the House of Rep-

resentatives and the Committee on Commerce, Science, and Transportation of the Senate a report on the findings of the Under Secretary with respect to the assessment required by subparagraph (A).

''(2) ELEMENTS.—The assessment required by paragraph (1)(A) shall include the following:

''(A) An evaluation of whether the watches, warnings, and information described in paragraph (1)(A) effectively—

''(i) communicate risk to the general public;

''(ii) inform action to prevent loss of life and property;

''(iii) inform action to support tsunami preparation and response; and

''(iv) deliver information in a manner designed to lead to appropriate action.

''(B) Subject to subsection (b)(2), such recommendations as the Under Secretary may have for—

''(i) legislative and administrative action to improve the watches and warnings described in paragraph (1)(A)(i); and

"(ii) such research as the Under Secretary considers necessary to address the focus areas described in paragraph (3).

"(3) FOCUS AREAS.—The assessment required by paragraph (1)(A) shall focus on the following areas:

"(A) Ways to communicate the risks posed by hazardous tsunami events to the public that are most likely to result in informed decision making regarding the mitigation of those risks.

"(B) Ways to provide actionable geographic information to the recipient of a watch or warning for tsunami, including partnering with emergency response agencies, as appropriate.

"(C) Evaluation of information delivery to support the preparation for and response to tsunamis.

"(4) CONSULTATION.—In conducting the assessment required by paragraph (1)(A), the Under Secretary shall consult with—

"(A) individuals in the academic sector, including individuals in the fields of social and behavioral sciences;

"(B) other weather services;

"(C) media outlets and other entities that distribute the watches and warnings described in paragraph (1)(A)(i);

"(D) emergency planners and responders, including State, local, and Tribal emergency management agencies; and

"(E) other government users of the watches and warnings described in paragraph (1)(A)(i), including the Federal Highway Administration.

"(5) METHODOLOGIES.—In conducting the assessment required by paragraph (1)(A), the Under Secretary shall use such methodologies as the Under Secretary considers are generally accepted by the weather enterprise, including methodologies of the fields of social and behavioral sciences.

"(b) IMPROVEMENTS TO TSUNAMI WATCHES AND WARNINGS.—

"(1) IN GENERAL.—Based on the assessment required by subsection (a)(1)(A), the Under Secretary shall make such improvements to the watches and warnings described in that subsection as the Under Secretary considers necessary—

"(A) to improve the communication of the risks posed by tsunami events; and

''(B) to provide specific and actionable geographic information to the recipient of a watch or warning for a tsunami.

''(2) REQUIREMENTS REGARDING RECOMMENDATIONS.—In conducting the assessment required by subsection (a)(1)(A), the Under Secretary shall ensure that any recommendation under subsection (a)(2)(B) that the Under Secretary considers a major change—

''(A) is validated by social and behavioral science using a generalizable sample;

''(B) accounts for the needs of various demographics, vulnerable populations, and geographic regions;

''(C) responds to the needs of Federal, State, local, and Tribal government partners and media partners; and

''(D) accounts for necessary changes to federally operated watch and warning propagation and dissemination infrastructure and protocols.''.

(2) CLERICAL AMENDMENT.—The table of contents for the Tsunami Warning and Education Act (enacted as title VIII of the Magnuson-Stevens Fishery Conservation and Management Reauthorization

Act of 2006 (Public Law 109–479)) is amended by inserting after the item relating to section 804 the following:

''Sec. 804A. Assessment of tsunami watches and warnings.''.

(e) NATIONAL TSUNAMI HAZARD MITIGATION PROGRAM.—Section 805 of the Tsunami Warning and Education Act (33 U.S.C. 3204) is amended—

(1) in subsection (b)—

(A) in the matter preceding paragraph (1)—

(i) by inserting ''and maintain'' after ''establish'' each place it appears; and

(ii) by striking ''Federal, State, local, and tribal government officials'' and inserting ''Federal, State, local, and Tribal government officials and representatives of Native Hawaiian organizations''; and

(B) in paragraph (3), by inserting before the semicolon '', such as vertical evacuation structures, sirens, and other potentially life-saving measures to ensure that communities designated as TsunamiReady have sufficient tsunami response options'';

(2) in subsection (c)—

(A) in paragraph (1), by striking ''tribes,'' and inserting ''Indian Tribes, Tribal organizations, Native Hawaiian organizations,'';

(B) in paragraph (4), by striking ''tribal, and local governments'' and inserting ''and local governments, Indian Tribes, Tribal organizations, Native Hawaiian organizations,'';

(C) in paragraph (5)—

(i) in subparagraph (A), by striking ''in the region, including paleotsunami data'' and inserting ''and tsunamigenic events in the region'';

(ii) by redesignating subparagraph (B) and subparagraphs (C) through (G) as subparagraph (C) and subparagraphs (E) through (I), respectively;

(iii) by inserting after subparagraph (A) the following:

''(B) Coastal digital elevation models to support the development of inundation maps.'';

(iv) by inserting after subparagraph (C), as so redesignated, the following:

''(D) Probabilistic tsunami hazard analysis maps.''; and

(v) by adding at the end the following:

''(J) Evaluation of the variation of inundation impact resulting from tsunami-driven sediment transport.

''(K) Evaluation of tsunami debris impact on critical infrastructure (as such term is defined in subsection (e) of the Critical Infrastructures Protection Act of 2001 (42 U.S.C. 5195c)) and lifelines.

''(L) High-resolution and high-quality digital elevation models needed for at-risk waterways, ports, and harbors, particularly for regions with outdated or low-quality data, not covered by existing inundation maps, or identified as a priority by the Administrator.'';

(D) in paragraph (7)—

(i) in subparagraph (C), by inserting ''and behavioral'' after ''social''; and

(ii) by adding at the end the following:

''(E) The development and regular maintenance of a user-friendly repository of inundation and evacuation maps and evacuation mapping guidelines for States, local governments, Indian Tribes, Tribal organizations, and Native

Hawaiian organizations on the website of the program conducted under subsection (a).

''(F) Coordination with tsunami-prone, rural communities to enhance emergency planning and response efforts, including through the TsunamiReady program.''; and

(E) in paragraph (8)(A)—

(i) by redesignating clauses (ii) and (iii) as clauses (iii) and (iv), respectively; and

(ii) by inserting after clause (i) the following:

''(ii) tsunami source parameters;'';

(3) in subsection (d)—

(A) in paragraph (3), by striking ''tribal'' and inserting ''Tribal''; and

(B) in paragraph (6), by striking ''tribal, and territorial governments and agencies,'' and inserting ''and territorial governments and agencies, Indian Tribes, Tribal organizations, Native Hawaiian organizations,''; and

(4) in subsection (e), by striking ''tribes,'' and inserting ''Indian Tribes, Tribal organizations, Native Hawaiian organizations,''.

(f) TSUNAMI RESEARCH PROGRAM.—Section 806 of the Tsunami Warning and Education Act (33 U.S.C. 3205) is amended—

(1) in subsection (a)—

(A) by striking ''State, tribal, and territorial governments, and academic institutions'' and inserting ''State and territorial governments, Indian Tribes, Tribal organizations, Native Hawaiian organizations, and academic institutions (including Tribal Colleges or Universities)'';

(B) by striking ''section 805(d)'' and inserting ''section 805(b)''; and

(C) by inserting ''and management'' after ''data collection'';

(2) in subsection (b)—

(A) in paragraph (1), by inserting ''deployment and'' after ''may include'';

(B) in paragraph (3), by striking ''social science research'' and inserting ''social and behavioral science research'';

(C) in paragraph (4), by striking ''and'' after the semicolon;

(D) by redesignating paragraph (5) as paragraph (7); and

(E) by inserting after paragraph (4) the following:

''(5) develop and maintain a data portal for advancing research and model development;

''(6) develop decision support tools; and''; and

(3) by adding at the end the following:

''(c) RESEARCH AND DEVELOPMENT PLAN.—Not later than 1 year after the date of enactment of this subsection, and not less frequently than every 3 years thereafter until 2036, the Administrator, in consultation with the Interagency Council for Advancing Meteorological Services, shall develop a research and development and research to operations plan to improve tsunami detection and forecasting capabilities that—

''(1) identifies and prioritizes research and development priorities to satisfy section 804;

''(2) identifies key research needs for better detecting and forecasting tsunamis impacting the United States and its territories;

''(3) develops plans for transitioning research to operations; and

''(4) identifies collaboration opportunities that may advance and align tsunami research, development, warnings, and operations between the centers supported or maintained under section 804, the Na-

tional Tsunami Hazard Mitigation Program, the National Oceanic and Atmospheric Administration Center for Tsunami Research, the National Science Foundation, the United States Geological Survey, the Federal Emergency Management Agency, State and local governments, Indian Tribes, Tribal organizations, Native Hawaiian organizations, institutions of higher education, private entities and other appropriate stakeholders.''.

(g) GLOBAL TSUNAMI WARNING AND MITIGATION NETWORK.—Section 807 of the Tsunami Warning and Education Act (33 U.S.C. 3206) is amended—

(1) in subsection (b)—

(A) in the matter preceding paragraph (1), by striking ''Pacific Ocean nations participating in the International Tsunami Warning System of the Pacific,'' and inserting ''Pacific Ocean and Caribbean Sea nations participating in the International Tsunami Warning and Mitigation System,'';

(B) in paragraph (2), by striking ''national warning systems, and make information'' and inserting '', maintaining, and strengthening the capacities of their national warning systems, by making information'';

(C) by redesignating paragraphs (3) and (4) as paragraphs (4) and (5), respectively;

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

''(3) provide decision support services and improve preparedness and tsunami readiness through exercises and drills, outreach, training, and capacity development of national tsunami warning centers and disaster and emergency management agencies;'';

(E) in paragraph (4), as so redesignated—

(i) by striking ''maintain a library of materials'' and inserting ''serve as an information source''; and

(ii) by striking ''tsunami in general'' and inserting ''tsunamis and tsunami hazard-related risks to the public''; and

(F) in paragraph (5), as so redesignated, by inserting '', tools,'' after ''materials''; and

(2) in subsection (d), by inserting ''and management'' after ''data sharing''.

(h) TSUNAMI SCIENCE AND TECHNOLOGY ADVISORY PANEL.—Section 808 of the Tsunami Warning and Education Act (33 U.S.C. 3206a) is amended—

(1) in subsection (b)(1), by inserting ''and behavioral'' after ''social''; and

(2) by adding at the end the following:

''(e) SUNSET.—The Panel shall terminate not later than 6 years after the date of the enactment of the Weather Research and Forecasting Innovation Reauthorization Act of 2026.''.

(i) ANNUAL NOTIFICATIONS; GOVERNMENT-TO-GOVERNMENT CONSULTATION WITH INDIAN TRIBES.—

(1) IN GENERAL.—The Tsunami Warning and Education Act (33 U.S.C. 3201 et seq.) is amended—

(A) by redesignating section 809 as section 811; and

(B) by inserting after section 808 the following:

''SEC. 809. ANNUAL NOTIFICATIONS.

''Not later than September 30 of each fiscal year until fiscal year 2031, the Administrator shall provide the Committee on Science, Space, and Technology of the House of Representatives, the Committee on Appropriations of the House of Representatives, the Committee on Commerce, Science, and Transportation of the Senate, and the Committee on Appropriations of the Senate a notification with an accounting of funds spent in such fiscal year for the programs authorized under this title, that includes—

''(1) the amount of funds allocated for the tsunami hazard mitigation program under section 805; and

''(2) the amount of funds allocated for the tsunami research program under section 806.

''SEC. 810. GOVERNMENT-TO-GOVERNMENT CONSULTATION WITH INDIAN TRIBES.

''The Administrator shall conduct government-to-government consultation with Indian Tribes in implementing this title.''.

(2) TABLE OF CONTENTS AMENDMENT.—The table of contents in section 1(b) of the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006 (Public Law 109–479; 120 Stat. 3575) is amended by striking the item relating to section 809 and inserting the following:

''Sec. 809. Annual notifications.
''Sec. 810. Government-to-government consultation with Indian Tribes.
''Sec. 811. Authorization of appropriations.''.

(j) AUTHORIZATION OF APPROPRIATIONS.—Section 811 of the Tsunami Warning and Education Act, as so redesignated, is amended to read as follows:

''SEC. 811. AUTHORIZATION OF APPROPRIATIONS.

''There are authorized to be appropriated to the Administrator to carry out this title $30,000,000 for each of fiscal years 2027 through 2031, of which—

''(1) not less than 27 percent of the amount appropriated for each fiscal year shall be for activities conducted at the State level under the national tsunami hazard mitigation program under section 805; and

''(2) not less than 8 percent of the amount appropriated shall be for the tsunami research program under section 806.''.

(k) USE OF IPAWS TO DELIVER TSUNAMI ALERTS.—

(1) IN GENERAL.—The Administrator, in consultation with the Administrator of the Federal Emergency Management Agency and the Federal Communications Commission, shall clarify and document the responsibilities and decision-making processes of the Administration, the Federal Emergency Management Agency, and the Federal Communications Commission with respect to the use of the Integrated Public Alert and Warning System to deliver tsunami alerts to the Emergency Alert System and the Wireless Emergency Alerts system.

(2) MEMORANDUM OF UNDERSTANDING.—Not later than 180 days after the date of enactment of this Act, the Administrator shall—

(A) update its memorandum of understanding with the Federal Emergency Management Agency and the Federal Communications Commission to reflect the responsibilities and processes clarified under paragraph (1); and

(B) provide the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate with a copy of such updated memorandum of understanding.

(l) OUTREACH RESPONSIBILITIES.—Section 511 of the Weather Research and Forecasting Innovation Act of 2017 (33 U.S.C. 3208) is amended—

(1) in the matter preceding paragraph (1), by inserting ''and Indian Tribes, Tribal organizations, and Native Hawaiian organizations (for purposes of this section, as such terms are defined in section 802 of the Tsunami Warning and Education Act (33 U.S.C. 3201))'' after ''managers'';

(2) in paragraph (1), by striking ''804(d)'' and inserting ''804(e)''; and

(3) in paragraph (1), by striking ''and emergency managers'' and inserting '', emergency man-

agers, Indian Tribes, Tribal organizations, and Native Hawaiian organizations''.

(m) REPORT ON CERTAIN TSUNAMI THREATS.—

(1) DEFINITIONS.— In this subsection:

(A) COVERED EVENT.—The term ''covered event'' means a tsunami or combined earthquake and tsunami event that impacts the United States.

(B) CRITICAL INFRASTRUCTURE.—The term ''critical infrastructure'' has the meaning given such term in subsection (e) of the Critical Infrastructures Protection Act of 2001 (42 U.S.C. 5195c).

(2) REPORT.—

(A) IN GENERAL.—Not later than 18 months after the date of enactment of this Act, the Comptroller General of the United States, in consultation with the entities described in paragraph (3), shall produce a report on how the United States should prepare for, mitigate against, respond to, and recover from each of the following types of covered events:

(i) A covered event in the Cascadia Subduction Zone.

(ii) A covered event that impacts Alaska, including in the Alaska-Aleutian Subduction Zone.

(iii) A covered event in the Kuril-Kamchatka Subduction Zone.

(B) REQUIREMENTS.—The report under this paragraph shall, with respect to each type of covered event described in subparagraph (A), include each of the following:

(i) A description of a command structure plan, including the roles of Federal departments and agencies, State and local governments, Indian Tribes, Tribal organizations, and Native Hawaiian organizations during and following the covered event.

(ii) A description of how Federal departments and agencies can improve coordination to enhance the ability to prepare and plan for, mitigate against, provide warning of, respond to, and recover from the covered event.

(iii) A strategy to ensure collaboration between relevant Federal departments and agencies for purposes of—

(I) completing a risk assessment of Federal facilities to identify such facilities that may need improvements to withstand the covered event; and

(II) developing a strategic plan to—

(aa) support mitigation efforts for and retrofitting of Federal, State, local, and Tribal critical infrastructure; and

(bb) help save lives during and immediately after the covered event.

(iv) A strategy to improve Federal guidance and assistance to State and local governments, Indian Tribes, Tribal organizations, and Native Hawaiian organizations in developing and implementing comprehensive plans to develop the ability to prepare and plan for, mitigate against, provide warning of, respond to, and recover from the covered event.

(v) If the covered event is large scale, an interagency search and rescue strategy

for such covered event, which strategy shall include—

(I) a command structure plan, including the roles of Federal departments and agencies, State and local governments, Indian Tribes, Tribal organizations, and Native Hawaiian organizations if such command structure would differ from the structure under clause (i);

(II) the sources of personnel and assets that can be utilized to support search and rescue efforts;

(III) an estimation of the required personnel and assets and an identification of any gaps in personnel and assets; and

(IV) an identification of and a strategy to address the vulnerabilities of existing infrastructure that will be necessary for search and rescue efforts.

(vi) A strategy for addressing the impacts of the covered event to critical infrastructure, including the responsibilities of

Federal departments and agencies, State and local governments, Indian Tribes, Tribal organizations, Native Hawaiian organizations, and private entities.

(vii) Recommendations on how Federal departments and agencies can develop a mitigation strategy, including providing financial assistance to State, local, and Tribal operators, for any infrastructure that provides information to support or issue warnings for the covered event.

(viii) Recommendations on administrative or legislative changes required to implement the report for the covered event.

(C) PUBLIC AVAILABILITY.—Not later than 1 month after completing the report under this paragraph, the Comptroller General shall make such report available to the public.

(3) ENTITIES DESCRIBED.—The entities described in this paragraph are—

(A) the Administration, the Federal Emergency Management Agency, the United States Geological Survey, the National Guard Bureau, the Coast Guard, the United States Transportation Command, the Department of Transpor-

tation, and other Federal departments and agencies as determined appropriate by the Comptroller General;

(B) the States of Alaska, California, Hawaii, Oregon, and Washington;

(C) the territories of American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands;

(D) Indian Tribes, Tribal organizations, and Native Hawaiian organizations;

(E) local governments;

(F) institutions of higher education and other research institutions with relevant expertise; and

(G) private sector representatives that may be impacted by the applicable type of covered event described in paragraph (2)(A).

(4) STRATEGY.—Not later than 1 year after the completion of the report required under paragraph (2), the Administration and the Federal Emergency Management Agency shall, in consultation with the National Guard Bureau, the Coast Guard, the United States Transportation Command, the United States Geological Survey, the Department of Transportation, and other Federal departments and agen-

cies as determined appropriate, provide the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a written strategy and briefing on how the relevant Federal departments and agencies will implement such report within their respective statutory authorities for each type of covered event described in paragraph (2)(A).

(n) DEFINITIONS.—In this section, the terms ''Administration'', ''Administrator'', ''Indian Tribe'', ''Native Hawaiian organization'', ''Tribal organization'', and ''tsunami'' have the meanings given such terms in section 802 of the Tsunami Warning and Education Act (33 U.S.C. 3201).

SEC. 106. OBSERVING SYSTEM PLANNING.

Section 106 of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8516) is amended—

(1) in paragraph (3)—

(A) by inserting ''Federal'' before ''observing capabilities''; and

(B) by striking ''and'' after the semicolon;

(2) in paragraph (4)—

(A) by inserting ", including private sector partnerships or commercial acquisition," after "options"; and

(B) by striking the period and inserting a semicolon; and

(3) by adding at the end the following:

"(5) compare costs and schedule, including cost-benefit analysis, of Federal and private sector supplemental options to fill the observation data requirements under paragraph (1) and gaps identified pursuant to paragraph (3); and

"(6) not later than 1 year after the date of the enactment of this paragraph, submit to Congress a report that provides an analysis of the technical requirements, schedule, and cost to place an operational polar-orbiting environmental satellite capability in the early morning orbit to support the weather enterprise and the mission of the National Oceanic and Atmospheric Administration and a cost-benefit analysis of such placement.".

SEC. 107. OBSERVING SYSTEM SIMULATION EXPERIMENTS.

Section 107 of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8517) is amended—

(1) in subsection (b)(3), by striking ''providing data'' and inserting ''comparison to current or experimental commercial system capabilities that provide data'';

(2) in subsection (c)(1), by striking '', including polar-orbiting and geostationary satellite systems,'';

(3) by striking subsection (d); and

(4) by redesignating subsection (e) as subsection (d).

SEC. 108. COMPUTING RESOURCES PRIORITIZATION.

(a) COMPUTING RESEARCH INITIATIVE.—Section 108 of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8518) is amended by striking subsection (a)(3)(C) and all that follows through subsection (b)(7) and inserting the following:

''(b) ARTIFICIAL INTELLIGENCE INVESTMENTS.—

''(1) IN GENERAL.—The Under Secretary shall leverage artificial intelligence and machine learning technologies to facilitate, optimize, and further leverage advanced computing to accomplish critical missions of the National Oceanic and Atmospheric Administration.

''(2) ACQUISITION OF SYSTEMS.—The Under Secretary shall include computing requirements needed to support technologies specified in para-

graph (1) as part of major acquisitions of high-performance computing systems or cloud computing services for research, testing and evaluation, and operations.

''(c) CENTERS OF EXCELLENCE.—

''(1) IN GENERAL.—The Under Secretary may expand, and where applicable establish through a competitive, merit-reviewed process, centers of excellence to aid the adoption of next-generation artificial intelligence and machine learning-enabled advanced computing capabilities.

''(2) ACTIVITIES.—Each center expanded or established under paragraph (1) may carry out activities that include the following:

''(A) Leveraging public-private partnerships for infrastructure development training and workforce development.

''(B) Developing and optimizing tools, libraries, algorithms, data structures, and other supporting software necessary for specific applications on high-performance computing systems.

''(C) Applying modern artificial intelligence, deep machine learning, and advanced

data analysis technologies to address current and emerging challenges.

''(D) To the maximum extent practicable, exploring quantum computing and related partnerships with public, private, and academic entities to improve the accuracy and resolution of weather predictions.

''(d) COORDINATION.—In carrying out activities under this section, the Under Secretary shall prevent unnecessary duplication and coordinate research efforts across the National Oceanic and Atmospheric Administration, and leverage coordinating activities managed by the National Science and Technology Council, the Interagency Council for Advancing Meteorological Services, and other relevant interagency entities.

''(e) RESEARCH SECURITY.—The activities authorized under this section shall be applied in a manner consistent with subtitle D of title VI of the Research and Development, Competition, and Innovation Act (enacted as division B of Public Law 117–167; 42 U.S.C. 19231 et seq.).''.

(b) STRATEGIC PLAN ON HIGH-PERFORMANCE COMPUTING AND DATA MANAGEMENT NEEDS.—

(1) IN GENERAL.—The Under Secretary shall make publicly available not later than 1 year after

the date of enactment of this Act, and update every 5 years thereafter until 2037, a 5-year strategic plan that outlines the high-performance computing and data management requirements and needs of the National Oceanic and Atmospheric Administration and actions and strategies to address those requirements and needs.

(2) PLAN ELEMENTS.—At a minimum, the strategic plan required by paragraph (1) shall include the following:

(A) A 5-year prospective outlook of computing resources and upgrades needed to meet the mission needs of the National Oceanic and Atmospheric Administration for fisheries management, oceanographic forecasting, and ecological forecasting.

(B) An identification of—

(i) computing and processing resources of the Administration and a 5-year projected need for such resources, disaggregated by line office of the Administration;

(ii) facilities, commercial contracts, and partnerships (with other Federal departments and agencies or other institu-

tions or entities) of the Administration that are providing computing and data management support or capacity as of the date of the plan;

(iii) the use by the Administration of cloud computing and other emerging technologies, such as artificial intelligence and machine learning;

(iv) additional technologies that have the potential to increase effectiveness and efficiency for data storage and processing power, including challenges to access and use of those technologies;

(v) the distribution of computing resources among the operations and research functions of the Administration;

(vi) products and services of the Administration that have not become available to the public because of a lack of computing resources;

(vii) current and future workforce development needs of the Administration, such as information technology and software engineering needs; and

(viii) the high-performance computing requirements of the Administration, with a special focus on requirements that are common across line offices of the Administration.

(C) Timelines and performance measures for assessing progress toward attaining goals for—

(i) computing infrastructure and architecture of the Administration (including facilities, hardware, and software); and

(ii) use by the Administration of technologies that will increase effectiveness and efficiency for data storage and processing power, including challenges to access and use of such technologies.

(D) A 5-year life cycle analysis of the management of facilities, hardware, and engineering involved in the strategic plan that includes—

(i) program formulation for project conception, implementation, and closure; and

(ii) technical infrastructure, products, processes, data, and personnel resources

required to achieve defined cost, schedule, and performance objectives.

(E) If appropriate, a description of actions taken to implement the previous plan.

(3) PUBLIC INVOLVEMENT.—In developing the strategic plan required by paragraph (1), the Under Secretary shall invite comments and other feedback from the public through a notice in the Federal Register to inform the strategic plan.

(4) ANNUAL BRIEFINGS.—

(A) IN GENERAL.—Not later than 1 year after the date of the enactment of this Act, and annually thereafter until 2035, the Under Secretary shall brief Congress on the progress made toward the objectives of the strategic plan required by paragraph (1).

(B) ELEMENTS.—Each briefing required by subparagraph (A) shall include the following:

(i) An evaluation of the progress made in implementing the strategic plan.

(ii) Such updates to the strategic plan as the Under Secretary considers appropriate.

SEC. 109. EARTH PREDICTION INNOVATION CENTER.

Section 102(b)(5) of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8512(b)(5)) is amended—

(1) in subparagraph (D), by striking ''and'' after the semicolon; and

(2) by striking subparagraph (E) and inserting the following:

''(E) developing community weather research modeling systems that—

''(i) are accessible by the public in accordance with section 10601 of the James M. Inhofe National Defense Authorization Act for Fiscal Year 2023 (15 U.S.C. 8512a) and available for archive and long-term study;

''(ii) meet basic end-user requirements for running on public computers and networks located outside of secure National Oceanic and Atmospheric Administration information and technology systems;

''(iii) utilize, whenever appropriate and cost effective, innovative strategies and methods, including cloud-based computing capabilities, for hosting and management

of part or all of the systems described in this subparagraph;

''(iv) utilize modeling systems that allow for interoperability with new model components, modules, and next-generation software and coding languages;

''(v) allow for open testing and integration of promising operational model improvements from the broader community;

''(vi) access on as close to a real-time basis as possible operational data and metadata, including commercially purchased data for use in the model testing conducted by the Earth Prediction Innovation Center pursuant to redistribution restrictions, licensing agreements, and applicable laws (including regulations) that were in effect on the date of enactment of the Weather Research and Forecasting Innovation Reauthorization Act of 2026; and

''(vii) provide supported and portable versions of the unified forecast system, including applications for fire weather, subseasonal to seasonal forecasting, hurricane, space weather, ocean, cryosphere, air qual-

ity, and coastal models, that can reproduce current operational global and regional model prediction; and

''(F) establishing a National Oceanic and Atmospheric Administration Data Lake, to be maintained by the Administration, a commercial partner, or non-profit entity, that consolidates and maintains a publicly available and continuously updated collection of data and metadata used in numerical weather prediction for use in the Earth Prediction Innovation Center's model testing, pursuant to redistribution restrictions, licensing agreements, and applicable laws (including regulations) that were in effect on the date of enactment of the Weather Research and Forecasting Innovation Reauthorization Act of 2026.''.

SEC. 110. SATELLITE ARCHITECTURE PLANNING.

(a) NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION SATELLITE SYSTEMS AND DATA.—Section 301 of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8531) is amended—

(1) in subsection (a), by striking paragraph (1) and redesignating paragraphs (2), (3), and (4) as paragraphs (1), (2), and (3), respectively;

(2) by amending subsection (b) to read as follows:

''(b) NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION SATELLITE SYSTEMS AND DATA.—

''(1) SENSE OF CONGRESS.—It is the sense of Congress that—

''(A) Congress reaffirms the prohibition barring any effort to lease, sell, or transfer to the private sector or commercialize any portion of the weather satellite systems operated by the Department of Commerce, or any successor agency, as set forth in section 60161 of title 51, United States Code; and

''(B) the National Oceanic and Atmospheric Administration should implement a robust satellite architecture designed with the goal of ensuring that at least 2 failures of space-based operational systems would be required before a data gap occurs.

''(2) IN GENERAL.—The Under Secretary shall acquire and maintain space-based observation capabilities of the Administration that provide critical operations-focused data and information to support the mission of the Administration in order to protect

lives and property and safeguard the economy of the United States.

''(3) OPERATIONS.—

''(A) IN GENERAL.—In carrying out paragraph (2), the Under Secretary shall ensure government capacity for satellite command and control and data transmission and processing.

''(B) RULE OF CONSTRUCTION.—This paragraph shall not be construed to limit the Under Secretary from using contractor-operated functions, commercial services, or other non-governmental capabilities for satellite command and control and data transmission and processing.

''(4) COLLABORATION.—

''(A) IN GENERAL.—The Under Secretary shall ensure continuity of space-based observations and implement, as appropriate, recommendations from the NOAA Observing Systems Council, or a successor entity, to ensure an appropriate mix of government, academic, commercial sector, and international partnerships, including a broadened effort on data acquisition through the Commercial Data Pro-

gram under section 302 when cost effective and beneficial to the Administration.

''(B) REPORT TO CONGRESS.—

''(i) IN GENERAL.—Not later than 1 year after the date of enactment of the Weather Research and Forecasting Innovation Reauthorization Act of 2026, the Under Secretary shall study and report to Congress on varying acquisition models, including government-owned assets, contractor operated functions, and data-as-a-service models, for future space-based observing capabilities.

''(ii) CONTENTS OF REPORT.—The report under clause (i) shall assess the relative costs, benefits, short- and long-term operational risks, resilience, and mission impacts of each model.

''(5) PRIORITY.—The Under Secretary shall ensure that platforms acquired and maintained under paragraph (2) prioritize the development of products and services that are tailored to meet the Administration's mission and have sufficient Federal personnel to manage and operate the platforms and associated infrastructure.

''(6) LONG TERM DATA ARCHIVE.—The Under Secretary shall maintain the National Centers for Environmental Information, or a successor entity, to provide a long-term archive and access to the national and global data and metadata of the Administration.''.

(3) in subsection (c) by adding at the end the following:

''(3) GEOSTATIONARY EXTENDED OBSERVATION.—

''(A) IN GENERAL.—The Under Secretary shall develop and maintain geostationary extended observations with the next generation geostationary orbit satellite systems, known as GeoXO, that—

''(i) retain continuity of data collected from geostationary orbit, with data quality standards meeting or exceeding those of the GOES–R program;

''(ii) advance core weather-monitoring capabilities, while ensuring imaging and sounding remain core instruments on all satellites to ensure full coverage of the continental United States; and

"(iii) launch a first satellite not later than 2032.

"(B) MISSION ARCHITECTURE AND IMPLEMENTATION PLAN.—

"(i) IN GENERAL.—Not later than 60 days after the date of enactment of the Weather Research and Forecasting Innovation Reauthorization Act of 2026, the Under Secretary shall submit to the appropriate committees of Congress a revised mission architecture and implementation plan, including component costs, costs associated with terminating or altering current mission architecture, and a planned launch schedule.

"(ii) APPROPRIATE COMMITTEES OF CONGRESS DEFINED.—In this subparagraph, the term 'appropriate committees of Congress' means—

"(I) the Committee on Commerce, Science, and Transportation and the Committee on Appropriations of the Senate; and

"(II) the Committee on Science, Space, and Technology and the Com-

mittee on Appropriations of the House of Representatives.'';

(4) in subsection (d)(3), by striking ''2030'' and inserting ''2035''; and

(5) by striking subsection (f) and inserting the following:

''(f) REPORTS.—

''(1) IN GENERAL.— Not later than 90 days after September 30 of each fiscal year through September 30, 2035, 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 on—

''(A) the use of additional transaction authority by the National Oceanic and Atmospheric Administration during the previous fiscal year; and

''(B) the partnership between the National Oceanic and Atmospheric Administration and the National Aeronautics and Space Administration for current and planned government-owned, space-based observing systems of the National Oceanic and Atmospheric Administration.

''(2) CONTENTS.—Each report shall include—

''(A) for each transaction agreement in effect during the fiscal year covered by the report—

''(i) an indication of whether the transaction agreement is a reimbursable, non-reimbursable, or funded agreement;

''(ii) a description of—

''(I) the subject and terms;

''(II) the parties;

''(III) the responsible National Oceanic and Atmospheric Administration line office;

''(IV) the value;

''(V) the extent of the cost sharing among Federal Government and non-Federal sources;

''(VI) the duration or schedule; and

''(VII) all milestones;

''(iii) an indication of whether the transaction agreement was renewed during the previous fiscal year;

''(iv) the technology areas in which research projects were conducted under that agreement;

''(v) the extent to which the use of that agreement—

''(I) has contributed to a broadening of the technology and industrial base available for meeting National Oceanic and Atmospheric Administration needs; and

''(II) has fostered within the technology and industrial base new relationships and practices that support the United States; and

''(vi) the total value received by the Federal Government under that agreement for that fiscal year;

''(B) a list of all anticipated reimbursable, non-reimbursable, and funded transaction agreements for the upcoming fiscal year; and

''(C) for the partnership between the National Oceanic and Atmospheric Administration and the National Aeronautics and Space Administration for current and planned government-owned, space-based observing systems of

the National Oceanic and Atmospheric Administration—

"(i) a description of any actions taken or planned to reduce costs and improve the schedule performance and timely delivery of satellite observing systems;

"(ii) a description of any new, renewed, or planned modifications to the management agreement with the National Aeronautics and Space Administration for the upcoming fiscal year; and

"(iii) for each current or planned program, project, or activity carried out jointly with, or through, such partnership—

"(I) a description of the program, project, or activity and the respective roles and responsibilities of the National Oceanic and Atmospheric Administration and the National Aeronautics and Space Administration;

"(II) the total amount of funds obligated or transferred by the National Oceanic and Atmospheric Administration to the National Aeronautics and Space Administration

during the fiscal year covered by the report, separately identifying—

''(aa) amounts attributable to the direct costs of the program, project, or activity; and

''(bb) administrative, management, institutional, overhead, and other indirect costs assessed by the National Aeronautics and Space Administration;

''(III) the performance of the program, project, or activity against applicable cost, schedule, technical, and performance milestones; and

''(iv) the goals and objectives for the partnership, such as—

''(I) improving the coordination between the two agencies;

''(II) eliminating unnecessary duplication of activities;

''(III) considering the transition of research observations and instrumentation to operations; and

''(IV) ensuring the continuity of relevant satellite observations.''.

(b) REVISION OF SATELLITE ANOMALY NOTIFICATION POLICY.—

(1) IN GENERAL.—Not later than 60 days after the date of enactment of this Act, the Under Secretary of Commerce for Oceans and Atmosphere shall, in consultation with the appropriate congressional committees, revise and submit to such committees the National Environmental Satellite, Data, and Information Service Satellite and Product Anomaly Reporting Policy to improve congressional notification regarding satellite operational anomalies, including—

(A) the permanent loss of critical mission data;

(B) a reduction in the expected mission lifetime of a spacecraft or instrument;

(C) a switchover to a backup system due to the permanent loss of a primary spacecraft or sensor system; and

(D) any other issue that results in the loss of critical mission data for more than 24 hours.

(2) DEFINITIONS.—In this subsection:

(A) APPROPRIATE CONGRESSIONAL COMMITTEES.—The term ''appropriate congressional committees'' means—

(i) the Committee on Science, Space, and Technology and the Committee on Appropriations of the House of Representatives; and

(ii) the Committee on Commerce, Science, and Transportation and the Committee on Appropriations of the Senate.

(B) CRITICAL MISSION DATA.—The term ''critical mission data'' has the meaning given such term in the most recently published Satellite and Product Anomaly Reporting Policy of the National Environmental Satellite, Data, and Information Service as of the date of enactment of this Act.

SEC. 111. IMPROVING UNCREWED ACTIVITIES.

(a) IN GENERAL.—Section 102(b)(3) of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8512(b)(3)) is amended—

(1) in subparagraph (B), by striking ''aerial'' and inserting ''crewed and uncrewed aerial and surface''; and

(2) in subparagraph (G), by striking '', including commercial observing systems'' and inserting '', including stationary and mobile commercial observing systems, such as uncrewed aircraft and marine

systems, to provide observations of the atmosphere and ocean, and other observations, in cooperation with the Office of Marine and Aviation Operations''.

(b) USE OF UNCREWED AERIAL SYSTEMS.—Section 102 of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8512) is further amended—

(1) by striking subsection (d);

(2) by redesignating subsection (c) as subsection (d); and

(3) by inserting after subsection (b) the following:

''(c) USE OF UNCREWED AERIAL SYSTEMS.—

''(1) IN GENERAL.—In carrying out the program under this section, the Assistant Administrator for Oceanic and Atmospheric Research and the Assistant Administrator for the Office of Marine and Aviation Operations, whenever practical, shall use uncrewed aerial systems to assess damage and assist recovery after an extreme weather or water event.

''(2) AUTHORITY.—In carrying out the program under this section, the Assistant Administrator for Oceanic and Atmospheric Research and the Assistant Administrator for the Office of Marine and Aviation Operations may acquire uncrewed aerial systems and training resources for the regional offices

and partners of the National Oceanic and Atmospheric Administration for the use and deployment of those systems in storm assessments and response.

''(3) BRIEFING.—Not later than 1 year after the date of the enactment of the Weather Research and Forecasting Innovation Reauthorization Act of 2026, the Assistant Administrator for Oceanic and Atmospheric Research and the Assistant Administrator for the Office of Marine and Aviation Operations shall provide a briefing to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate regarding compliance with subtitle B of title XVIII of the National Defense Authorization Act for Fiscal Year 2024 in carrying out paragraph (1).''.

SEC. 112. INTERAGENCY COUNCIL FOR ADVANCING METEOROLOGICAL SERVICES.

(a) IN GENERAL.—Section 402 of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8542) is amended—

(1) in subsection (a)—

(A) by striking ''Interagency Committee for Advancing Weather Services'' and inserting ''Interagency Council for Advancing Meteoro-

logical Services (in this section referred to as the 'Interagency Council')''; and

(B) by striking ''Committee'' and inserting ''Council'';

(2) by amending subsections (b) and (c) to read as follows:

''(b) CO-CHAIRS; FEDERAL COORDINATOR.—The Director of the Office of Science and Technology Policy and the Under Secretary shall serve as co-chairs of the Interagency Council. The Under Secretary shall serve as the Federal Coordinator for Meteorology.

''(c) FURTHER COORDINATION.—The Director of the Office of Science and Technology Policy shall take such steps as are necessary to coordinate the activities of the Federal Government with stakeholders in the United States weather industry, academic partners, State governments, and emergency managers.''; and

(3) by adding at the end the following:

''(d) FUNCTIONS.—The Interagency Council shall be the formal mechanism by which all relevant Federal departments and agencies coordinate implementation of policy and practices to ensure United States global leadership in meteorological services. In doing so, the Interagency Council shall review programs and support relevant weather research and forecast innovation activities, as well as

other related implementation activities, related to Federal meteorological services, including by carrying out the following:

''(1) Identifying and helping prioritize meteorological research and service delivery needs, including relating to observations, operational systems, communications, and infrastructure.

''(2) Providing recommendations to streamline or consolidate activities and develop greater efficiencies in cross-agency activities.

''(3) Leveraging Earth system science research outcomes of the National Oceanic and Atmospheric Administration, the National Aeronautics and Space Administration, and other relevant Federal departments and agencies, including research outcomes related to the relevant recommended key science and applications questions and priorities in the National Academies of Sciences, Engineering, and Medicine's 2018 report 'Thriving on Our Changing Planet: A Decadal Strategy for Earth Observation from Space', to understand and predict high-impact weather phenomena.

''(4) Facilitating the expansion and strengthening of partnerships with private sector entities to advance meteorological research, communications,

and computing, including by implementing mechanisms to encourage and enable the participation of non-Federal employees in the functions of the Interagency Council.

''(5) Sharing information regarding meteorological research improvement needs and science opportunities across relevant Federal departments and agencies.

''(6) Providing advice to all relevant Federal departments and agencies regarding potential collaborations and expected levels of resources needed to maintain and operate the Interagency Council.

''(7) Enhancing communication and coordination and promoting sharing within relevant Federal departments and agencies and across the Interagency Council.

''(8) Developing, recruiting, and sustaining a professional workforce for meteorological research and services.

''(e) DATA INVENTORY.—The Interagency Council, in coordination with, and avoiding duplication with the efforts of, the United States Group on Earth Observations, shall promote data and metadata access and archive activities to increase accessibility, interoperability, and reusability by maintaining a data inventory of meteorolog-

ical observations. Not less frequently than once every 2 years for a period of 10 years beginning on the date of the enactment of this subsection, the Interagency Council shall solicit updated information from private sector entities identifying current and near future sources of such data. Such data shall be made available to participating agencies.

''(f) COORDINATION OFFICE.—The Interagency Meteorological Coordination Office shall provide to the Interagency Council such administrative and logistical support as the Interagency Council may require, as determined by the co-chairs.

''(g) COST SHARE.—Participating agencies of the Interagency Council specified under subsection (a) may provide reimbursable financial support to the Interagency Meteorological Coordination Office to enhance cost sharing and collaboration related to weather research and forecast innovation activities.

''(h) REPORT.—Not later than 1 year after the date of the enactment of this subsection, and annually thereafter until 2030, the Interagency Council shall publish a report that identifies among participating agencies the following:

''(1) Federal programs that use meteorological observations, data sources, and capabilities.

''(2) Federal programs that acquire such observations, data, and capabilities from private sector entities.

''(3) Advancements in meteorological data collection, assimilation, and forecasting that could improve Federal programmatic operational capabilities.

''(4) Barriers to acquiring meteorological observations, data sources, and capabilities that could be used to better meet Federal programmatic needs.''.

(b) REFERENCES.—Any reference to the Interagency Committee for Advancing Weather Services in any law, rule, regulation, paper, document, map, or other such record of the United States shall be deemed to be a reference to the Interagency Council for Advancing Meteorological Services.

SEC. 113. OCEAN OBSERVATIONS.

Section 12304(b) of the Integrated Coastal and Ocean Observation System Act of 2009 (33 U.S.C. 3603(b)) is amended by adding at the end the following:

''(5) SHIPS OF OPPORTUNITY PILOT PROGRAMS AND PROJECTS.—

''(A) IN GENERAL.—The Administrator, in coordination with the heads of relevant Federal departments and agencies, shall, subject to relevant regulations and certifications, maintain

pilot programs or projects to contract with research or commercial ship operators for data collection and assess the potential costs, benefits, and viability of a network of ocean and atmospheric observing instruments operating on research or commercial ocean vessels, including in the Arctic, in order to supplement the Integrated Ocean Observation System in improving understanding of coastal and ocean systems and their relationships to human activities.

''(B) STANDARDS AND SPECIFICATIONS.—The Administrator shall ensure that data acquired through the pilot programs or projects established pursuant to subparagraph (A) meets the most recent standards and specifications required for observation services and data as published pursuant to section 302(e) of the Weather Research and Forecasting Innovation Act of 2017.

''(C) REPORT.—Not later than 5 years after the date of the enactment of this paragraph, the Administrator, in consultation with the Secretary of Transportation, shall submit to Congress a report on the requirements for a global network of ocean and atmospheric instru-

ments operating on research or commercial ocean vessels for measurement and data transmission.

"(D) BRIEFING.—Not later than 1 year after the date of the enactment of this paragraph, the Under Secretary shall provide the Committee on Science, Space, and Technology and the Committee on Natural Resources of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a briefing on ocean observation networks and programs, including with respect to the following:

"(i) The status of the observational capabilities for weather forecasting, including any specific gaps in such capabilities.

"(ii) The plans of the Under Secretary to address such gaps and otherwise improve, expand, and sustain such capabilities.

"(iii) The cost analyses for such plans.

"(iv) The status of and funding for current and any planned agreements that—

''(I) are between the Under Secretary and the head of another Federal department or agency; and

''(II) are related to such ocean observation networks and programs.

''(E) LIMITATION.—No funds authorized to be appropriated for the Integrated Ocean Observation System under this Act may be used to carry out this paragraph.

''(F) SUNSET.—This paragraph shall terminate 1 year after the date on which the report required under subparagraph (C) is submitted by the Administrator.''.

SEC. 114. CONSOLIDATION OF REPORTS.

(a) WEATHER RESEARCH AND FORECASTING INNOVATION ACT OF 2017.—

(1) IN GENERAL.—The Weather Research and Forecasting Innovation Act of 2017 is amended—

(A) by amending section 105 (15 U.S.C. 8515) to read as follows:

''SEC. 105. WEATHER RESEARCH AND DEVELOPMENT PLANNING.

''Not later than 2 years after the date of enactment of the Weather Research and Forecasting Innovation Reauthorization Act of 2026, and not less frequently than

once every 2 years thereafter, the Under Secretary, acting through the Assistant Administrator for Oceanic and Atmospheric Research, and in coordination with the Director of the National Weather Service and the Assistant Administrator for Satellite and Information Services, shall issue a research and development and research to operations plan to maintain United States leadership in numerical weather prediction and forecasting that—

''(1) describes the forecasting skill and technology goals, technology transfer plan, objectives, expected budget, and progress of the National Oceanic and Atmospheric Administration in carrying out the program conducted under section 102;

''(2) identifies and prioritizes specific research and development activities, data collection and analysis, predictive modeling, demonstration of potential operational forecast application, education, training, and performance metrics, weighted to meet the operational weather and flood-event mission of the National Weather Service to achieve a weather-ready Nation;

''(3) describes how the program conducted under section 102 will collaborate with Federal departments and agencies, international partners, and stakeholders, including the United States weather

industry and academic partners, and the role of each in advancing weather forecasting and communications;

''(4) identifies, through consultation with the National Science Foundation, the United States weather industry, and academic partners, research necessary to advance the scientific understanding of weather processes and improve weather warning and forecast systems in the United States most effectively;

''(5) describes the ongoing research projects of the United States Weather Research Program, including—

''(A) the goals of those projects;

''(B) a description of those projects related to weather observations, short-term weather, or subseasonal forecasts within the Office of Oceanic and Atmospheric Research that are closest to operationalization; and

''(C) a description of the research that has been transitioned into operations, including research at the fire weather testbed established under section 703(a) of the Weather Research and Forecasting Innovation Reauthorization Act of 2026; and

''(6) describes how the National Oceanic and Atmospheric Administration is advancing community weather modeling.'';

(B) in section 403 (15 U.S.C. 8543)—

(i) in subsection (a), by inserting ''the'' after ''Director of''; and

(ii) by amending subsection (d) to read as follows:

''(d) ANNUAL BRIEFING.—Not less frequently than once each year, the Under Secretary shall—

''(1) brief the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate on participation in the program under subsection (a); and

''(2) highlight any innovations that come from the interaction described in subsection (b).''; and

(C) by striking sections 408 through 411 and section 414 and redesignating sections 412 and 413 as sections 408 and 409, respectively.

(2) CLERICAL AMENDMENTS.—The table of contents in section 1(b) of the Weather Research and Forecasting Innovation Act of 2017 is amended by striking the items relating to sections 408 through 414 and inserting the following:

"Sec. 408. Weather enterprise outreach.
"Sec. 409. Hurricane hunter aircraft.".

(b) NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION AUTHORIZATION ACT OF 1992.—The National Oceanic and Atmospheric Administration Authorization Act of 1992 (Public Law 102–567) is amended—

(1) in section 106, by striking subsection (c) (15 U.S.C. 1537); and

(2) in section 108 (15 U.S.C. 8520)—

(A) in subsection (a)—

(i) by striking paragraph (5); and

(ii) by redesignating paragraphs (6) through (12) as paragraphs (5) through (11), respectively;

(B) by striking subsection (b); and

(C) by redesignating subsection (c) as subsection (b).

SEC. 115. PRECIPITATION FORECAST IMPROVEMENT PROGRAM.

(a) IN GENERAL.—Title VI of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8561 et seq.) is amended—

(1) by redesignating section 603 as section 604; and

(2) by inserting after section 602 the following:

"SEC. 603. PRECIPITATION FORECAST IMPROVEMENT PROGRAM.

''(a) IN GENERAL.—The Under Secretary, in collaboration with the United States weather industry, other Federal departments and agencies, and academic partners, shall maintain a program to improve precipitation forecasting across timescales.

''(b) GOAL.—The goal of the program under subsection (a) shall be to provide more accurate, reliable, and timely precipitation forecasts across timescales through the development and application of a fully coupled Earth system prediction model in order to reduce the loss of life or property related to precipitation extremes, with a focus on the following:

''(1) Improving the understanding and prediction of precipitation extremes from a variety of weather systems, including atmospheric rivers.

''(2) Evaluating and incorporating, as appropriate, innovative observations into operational monitoring and forecast systems to improve precipitation forecasts.

''(3) Improving Earth system model predictions of precipitation extremes from atmospheric rivers, tropical cyclones, summertime thunderstorms, winter storms, and other phenomena, in coordination with relevant programs.

''(4) Enhancing research-to-operations transition through testbeds, including the evaluation of physical and social science, technology, and other research to develop products and services for implementation and use by relevant stakeholders.

''(5) Incorporating best practices from the social, behavioral, and economic sciences into operations for more effective and actionable watch and warning products that support public safety and damage mitigation decisions in coordination with the programs established in accordance with this Act.

''(6) Ensuring data and metadata management processes are in place to support data access and archive for long-term research and operations among multiple partners.

''(c) ACTIVITIES.—In carrying out the program under subsection (a), the Under Secretary shall support research-to-operations work, including the following:

''(1) Implementing key strategies and following priorities and objectives outlined in the Precipitation Prediction Grand Challenge Strategy of the National Oceanic and Atmospheric Administration.

''(2) Improving the physical science, operational modeling and tools, and technology related to better forecasting precipitation extremes across timescales.

''(3) Improving the social, behavioral, and economic sciences related to risk communication, and delivery of information critical for reducing the loss of life or property related to extreme precipitation.

''(4) Conducting the research necessary to develop and deploy probabilistic weather forecast guidance technology relating to precipitation extremes in operational practice.

''(5) Enhancing the operational capacity of the National Weather Service to deliver decision support for extreme precipitation.

''(6) Expanding computational resources to improve precipitation modeling.

''(d) ANNUAL BUDGET.—The Under Secretary shall submit to Congress, with the budget of the President submitted under section 1105 of title 31, United States Code, for a fiscal year, a proposed budget for activities to carry out this section in that fiscal year.''.

(b) CLERICAL AMENDMENT.—The table of contents in section 1(b) of the Weather Research and Forecasting Innovation Act of 2017 is amended by striking the item relating to section 603 and inserting the following:

''Sec. 603. Precipitation forecast improvement program.
''Sec. 604. Definitions.''.

TITLE II—ENHANCING FEDERAL WEATHER FORECASTING AND INNOVATION

SEC. 201. NEXT-GENERATION NUMERICAL WEATHER PREDICTION INITIATIVE.

(a) IN GENERAL.—The Under Secretary may establish a long-term, agency-wide initiative to focus and align numerical weather prediction activities around a shared strategic vision for the future to further protect lives and property, enhance the national economy, and promote international leadership.

(b) INITIATIVE GOALS.—An initiative under subsection (a) shall encourage physics-based and data-driven modeling approaches, the use of ensemble systems, continuous and collaborative model development, and the modernization of modeling infrastructure and software practices.

(c) ACTIVITIES.—In carrying out an initiative under subsection (a), the Under Secretary should seek to—

(1) modernize infrastructure to optimize forecast accuracy and efficiency;

(2) leverage community innovation by aligning operations with the weather research enterprise;

(3) develop a high-resolution physics-based global ensemble system with advanced data assimilation;

(4) explore the use of high-resolution artificial intelligence-based global superensembles;

(5) develop a long-term high-resolution reanalysis to drive innovation for artificial intelligence-based prediction systems;

(6) integrate probabilistic forecast guidance into scenario-based communication that supports actionable information; and

(7) sunset legacy modeling systems that are replaced by newer systems, while maintaining operational continuity.

(d) OPERATIONAL EQUIVALENCY REQUIREMENTS.—Not less than 90 days before any relevant Federal department or agency that supports software development that is used for weather predictions may transfer such management or operation to a non-Federal entity, that agency shall evaluate and provide a report to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate on how the successor infrastructure achieves operational equivalency and maintains forecast accuracy and data latency.

SEC. 202. RADAR NEXT PROGRAM.

(a) IN GENERAL.—The Under Secretary, in consultation with the Director of the National Weather Service, shall establish a program to be known as the ''Radar Next Program'' (in this section referred to as the ''program'').

(b) REQUIREMENTS.—In carrying out the program, the Under Secretary shall—

(1) develop performance and coverage requirements for the weather radar network of the United States, including for the territories of the United States;

(2) collaborate with the weather enterprise to determine potential solutions to update the weather radar network of the United States that meet the requirements developed under paragraph (1); and

(3) develop a plan in accordance with subsection (c).

(c) PLAN.—

(1) IN GENERAL.—The Under Secretary shall develop a plan to replace the Next Generation Weather Radar system of the National Weather Service in existence as of the date of the enactment of this Act (in this subsection referred to as the ''NEXRAD system'').

(2) ELEMENTS.—The plan developed under this subsection shall seek to continue and improve weath-

er radar coverage in the United States and its territories and include the following:

(A) Estimates of quantifiable improvements in performance, coverage, and accuracy to be made from potential options for replacement of the NEXRAD system.

(B) Development of a phased array radar test article to determine the specifications and requirements for such replacement.

(C) Expected actions needed to implement the recommendations of the report published by the Environmental Information Services Working Group of the Science Advisory Board of the National Oceanic and Atmospheric Administration on November 15, 2023, and entitled ''A NESDIS Observing System Backbone Framework'' to assist in defining a radar backbone architecture that will best serve the United States.

(D) Establishment of a weather surveillance radar testbed for the following:

(i) Evaluation of commercial radars with the potential to replace or supplement the NEXRAD system.

(ii) Providing technical assistance for the use of small, gap-filling radars with private and local partners in regions where geographical topography prevents the full use of large systems or in locations where such systems may not be commercially viable.

(E) Consultation and input solicited from academia, meteorologists, emergency managers, and public safety or utility officials regarding the specifications and requirements for replacement of the NEXRAD system.

(F) Prioritized locations for initial deployment of the system that will replace the NEXRAD system.

(G) Expected locations of the system that will replace the NEXRAD system, including sites located more than 75 miles away from an existing NEXRAD system station and additional appropriate locations.

(H) Expected or planned improvements to data available for weather and water-related forecasts and warnings from the system that will replace the NEXRAD system.

(3) PROCUREMENT DEADLINE.—The Under Secretary shall take such actions in accordance with the plan developed under this subsection to ensure the replacement of the Next Generation Weather Radar System not later than the earlier of—

(A) the date on which the existing system is projected to no longer meet operational requirements; or

(B) September 30, 2037.

(d) RADAR-AS-A-SERVICE.—

(1) IN GENERAL.—The Under Secretary, consistent with relevant activities under section 203, may partner or contract with entities outside of the National Oceanic and Atmospheric Administration to fill data gaps in weather radar coverage using weather radars and data assimilation technologies in order to—

(A) supplement data gaps in weather radar coverage, including at low levels and in wide areas, in existence as of the date of the enactment of this Act;

(B) ensure the continued performance of the weather radar network of the United States; and

(C) better detect significant precipitation and severe weather over a greater area across a population.

(2) CONSIDERATIONS.—In carrying out paragraph (1), the Under Secretary may consider—

(A) partnering or contracting with entities that have participated in the testbed described in subsection (c)(2)(D), the National Mesonet Program, or cooperative research and development agreements; and

(B) weather camera systems and services, including in consultation with the Federal Aviation Administration, as viable technologies to supplement weather forecasting and prediction needs.

(e) UPDATES TO CONGRESS.—The Under Secretary shall provide to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate annual updates on the implementation of this section.

SEC. 203. DATA VOIDS IN UNDER-OBSERVED AREAS OF THE UNITED STATES.

(a) IN GENERAL.—The Under Secretary shall carry out activities to ensure continuous comprehensive weather

observation coverage, impact-based decision support services, and emergency information sharing in the United States, including the following:

(1) Identifying regions in the United States and the territories of the United States that are underobserved, and as a result, have data gaps or experience disproportionate impacts from hazardous weather that threatens human life, health, and property.

(2) Identifying any challenges that contribute to the lack of weather observations under paragraph (1).

(3) Increasing weather observations and developing new weather observational capabilities with respect to the regions identified under paragraph (1).

(4) Establishing or supporting testbeds and deployments of decision support services to Federal, State, and local emergency operations centers to develop and integrate new weather, water, and climate observation or emergency information sharing tools, with respect to the regions identified under paragraph (1).

(5) To the maximum extent practicable, advancing weather and water forecasting and subsea-

sonal to seasonal modeling capabilities for the regions identified under paragraph (1).

(6) Undertaking workforce development efforts for emergency management officials and meteorologists in the regions identified under paragraph (1).

(7) Using observations to fill voids in data and better understand extreme rainfall in complex topography.

(8) Contributing to a national integrated heat health information system.

(b) CONSULTATION; COORDINATION.—The Under Secretary shall carry out activities under subsection (a)—

(1) in coordination with the Director of the National Weather Service and the Administrator of the Federal Emergency Management Agency;

(2) in consultation with the United States weather industry and academic partners; and

(3) in accordance with activities implemented through existing regional atmospheric, coastal, ocean, and Great Lakes observing systems.

(c) INTERAGENCY PARTNERSHIP TO SUPPORT PILOT PROJECTS.—

(1) IN GENERAL.—In carrying out this section, the Under Secretary, acting through the Director of the National Weather Service and in collaboration

with the Administrator of the Federal Emergency Management Agency, shall establish an interagency partnership to support pilot projects that accelerate coordination and use of localized weather, water, and subseasonal to seasonal data and impact-based decision support services in infrastructure and emergency management decisions by Federal, State, and local officials.

(2) PRIORITY.—At least one pilot project under paragraph (1) shall address key science challenges to using mesonet data in local decision making and development of new tools and training for owners and operators of critical infrastructure (as defined in subsection (e) of the Critical Infrastructures Protection Act of 2001 (42 U.S.C. 5195c)), such as dams, energy generation and distribution facilities, nuclear power plants, and transportation networks.

SEC. 204. RADAR INNOVATION FOR THE NEXT GENERATION.

(a) IN GENERAL.—The Under Secretary shall conduct research, development, testing, evaluation, and operational activities, using existing authorities and programs, to ensure the continued performance of weather radar capabilities, including systems being developed in areas impacted with interferences in the line of sight of such radar.

(b) REQUIREMENTS.—In carrying out activities under this section, the Under Secretary, in consultation with the Interagency Council for Advancing Meteorological Services, may—

(1) coordinate or partner with the private sector, academia, any Federal, State, or local government entity, or any other entity the Under Secretary considers appropriate;

(2) identify, evaluate, and test technologies or operational approaches to improve radar coverage and performance, including by mitigating the impacts of interferences on weather radar;

(3) to the maximum extent practicable, research additional solutions that could mitigate the effects of interferences on weather radar, such as—

(A) signal processing algorithms;

(B) short-term forecasting algorithms to supplement or mitigate the impacts of contaminated data;

(C) the use of dual polarization characteristics in mitigating the effects of wind turbines on weather radar; and

(D) gap filling radars to provide supplemental or replacement observations in impacted areas; and

(4) support the evaluation or demonstration of technical mitigation solutions for interferences to weather radar capabilities that are compatible with the operational requirements of the weather radar systems.

(c) PRIORITY.—In carrying out subsection (b), the Under Secretary shall prioritize consideration of the following technology-based mitigation solutions:

(1) Phased array weather radar systems.

(2) Supplementing, mitigating, or replacing contaminated data with commercial radar data.

(3) Using data from private sector associated meteorological towers or similar capabilities.

(4) The display on local forecasting equipment of wind farm boundaries and consolidated wind farm areas.

(5) The installation and provision of access to rain gauges.

(6) Any other technology-based mitigation solution the Under Secretary determines could improve radar coverage by overcoming interferences, beam blockage, or ghost echoes.

(d) REPORT; RECOMMENDATION.—

(1) IN GENERAL.—Not later than 2 years after the date of enactment of this Act, the Under Sec-

retary shall brief Congress on activities carried out under this section.

(2) FINAL RECOMMENDATION.—Not later than 5 years after the date of the enactment of this Act, the Under Secretary shall provide to Congress, in the form of a briefing or report, a recommendation on whether additional research, testing, and development established under subsection (a) is warranted.

(e) RULE OF CONSTRUCTION.—Nothing in this section shall be construed to require the establishment of a new program office or organizational structure.

(f) DEFINITIONS.—In this section:

(1) BEAM BLOCKAGE.—The term ''beam blockage'' means a signal that is partially or fully blocked due to an interference.

(2) GHOST ECHO.—The term ''ghost echo'' means radar signal reflectivity or velocity return errors in radar data due to the proximity of an interference.

(3) INTERFERENCE.—The term ''interference'' includes—

(A) a wind turbine that could limit the effectiveness of a weather radar system;

(B) any building that disrupts or limits the effectiveness of a weather radar system; or

(C) any other natural or human built structure that affects a weather radar system.

SEC. 205. ATMOSPHERIC RIVERS FORECAST IMPROVEMENT PROGRAM.

(a) IN GENERAL.—The Under Secretary, in collaboration with the United States weather industry and academic partners and in coordination with the precipitation forecast improvement program under section 603 of the Weather Research and Forecasting Innovation Act of 2017, as added by section 115 of this Act, shall establish an atmospheric river forecast improvement program (in this section referred to as the ''program'').

(b) GOAL.—The goal of the program shall be to reduce the loss of life and property and economic losses from atmospheric rivers through the research, development, and extension of accurate, effective, and actionable forecasts and warnings, including by—

(1) establishing quantifiable skill metrics for atmospheric river forecasts that include assessing the benefits of dynamical modeling, data assimilation, and machine learning improvements in the probabilistic forecasts of landfall location, extreme wind and precipitation, and cascading impacts;

(2) developing an atmospheric river forecast system within a unified forecast system, and advanc-

ing next-generation coupled modeling systems, with the capability of providing seasonal to short-range atmospheric river forecasts that include forecasts of snow accumulation and other hydrologic components;

(3) advancing scientific understanding of the roles of atmospheric rivers in subseasonal to seasonal precipitation and probabilistic predictions at subseasonal to seasonal scales;

(4) developing tools and improved forecast products to predict periods of active or inactive atmospheric river landfalls and inland penetration over the United States with a focus on addressing stakeholder and public needs related to perceiving, comprehending, and responding to atmospheric river forecast improvements;

(5) enhancing the transition of research to operations through testbeds of the National Oceanic and Atmospheric Administration, including the evaluation of physical and social science, technology, and other research to develop products and services for implementation and use by relevant stakeholders; and

(6) incorporating social, behavioral, and economic sciences into atmospheric river forecast communication, as appropriate.

(c) INNOVATIVE OBSERVATIONS, DATA ASSIMILATION, AND MODELING.—The Under Secretary shall ensure the program periodically examines, tests, and evaluates the value of incorporating innovative observations, data, and measurements with respect to the improvement of atmospheric river analysis, modeling, forecasts, predictions, and warnings.

(d) PROGRAM PLAN.—Not later than 270 days after the date of the enactment of this Act, the Under Secretary, in consultation with the Secretary of the Air Force or the Commander of the 53rd Weather Reconnaissance Squadron of the Air Force Reserve Command, shall develop a plan that details the specific activities relating to research, development, data acquisition, partnerships with the weather industry and academic partners, and technology transfer, and corresponding resources and timelines, necessary to achieve the goal of the program under subsection (b), as well as include any barriers to implementation. Such plan shall be made available to the public on release.

(e) ANNUAL BUDGET FOR PLAN SUBMITTAL.—After the development of the plan pursuant to subsection (d),

the Under Secretary shall submit to Congress, with the budget of the President submitted under section 1105 of title 31, United States Code, for a fiscal year, a proposed budget for the activities identified in such plan for that fiscal year.

(f) IMPROVED MODELING.—In carrying out the program, the Under Secretary may—

(1) develop, test, and operationalize prototype high-resolution Atmospheric River Analysis and Forecasting System models through research and operations partnerships with institutions of higher education and other partners outside the National Oceanic and Atmospheric Administration;

(2) enhance data assimilation of current and new satellite and ocean observations that is useful for atmospheric river analysis and forecasting predictions;

(3) improve data processing techniques related to atmospheric river analysis and forecasting predictions;

(4) use artificial intelligence and machine learning methods as applicable to atmospheric river analysis and forecasting predictions;

(5) ensure the surface and subsurface observations of the ocean meet the needs of atmospheric

river analysis and forecasting predictions on different timescales; and

(6) to the maximum extent practicable, improve or establish baseline weather monitoring services in areas that have historically experienced, or are predicted to experience, atmospheric rivers.

(g) CONDUCT OF RECONNAISSANCE.—The Under Secretary shall acquire and sustain adequate aircraft, scientific equipment, and personnel—

(1) to meet mission requirements of the National Hurricane Operations Plan and the National Winter Season Operations Plan;

(2) to ensure atmospheric river air reconnaissance observations are available throughout the expected seasons of tropical cyclones and atmospheric rivers;

(3) to the maximum extent practicable and in accordance with paragraph (5), to ensure data and information collected are made available for research and operations purposes;

(4) to participate in research and operations partnerships that guide flight planning and use research methods to improve and expand the capabilities and effectiveness of atmospheric river reconnaissance over time;

(5) to develop data management strategies to ensure that data and metadata are adequately stewarded, maintained, and archived; and

(6) to undertake such other additional activities as the Under Secretary, in consultation with the Secretary of the Air Force, considers appropriate to improve and grow the hurricane hunter and atmospheric river reconnaissance mission.

(h) IMPROVED ATMOSPHERIC RIVER HAZARD COMMUNICATION.—The Under Secretary may conduct research and development activities in coordination with the program established under section 403(a)—

(1) to, as appropriate, develop and refine—

(A) methods to categorize the intensity of weather and ocean hazards, including tropical cyclones and atmospheric rivers, on a quantitative scale; and

(B) the effectiveness of such scale in hazard communication;

(2) to develop best practices for communication of atmospheric river events and hazards across regions of the United States;

(3) to gather information from areas prone to hurricanes and atmospheric rivers regarding levels of knowledge and preparedness, including responses to

early forecasts and warnings by the National Oceanic and Atmospheric Administration; and

(4) to explore strategies to communicate, and the effectiveness of communicating, that hurricane and atmospheric river events are beneficial at lower intensities versus hazardous at higher intensity.

SEC. 206. COASTAL FLOODING AND STORM SURGE FORECAST IMPROVEMENT PROGRAM.

(a) IN GENERAL.—The Under Secretary, in collaboration with the Integrated Ocean Observing System, the United States weather enterprise, and academic partners, shall establish a coastal flooding and storm surge forecast improvement program (in this section referred to as the ''program'').

(b) GOAL.—The goal of the program shall be to reduce the loss of life or property from coastal flooding, including high tide flooding, and storm surge events through the development and extension of accurate, effective, actionable, and probabilistic forecasts and warnings.

(c) PRIORITY.—In implementing the program, the Under Secretary shall prioritize activities that carry out the following:

(1) Improving understanding and capacity for real-time operational prediction of the ocean's role in

coastal flooding, including high tide flooding, and storm surge events.

(2) Improving the capacity to mitigate, adapt to, or prevent the impacts of coastal flooding, including high tide flooding, and storm surge events, including by improving the understanding of coastal communities and the capacity of such communities to perceive, comprehend, and respond to forecast information.

(3) Incorporating data from in situ distributed sensors into predictive models and re-analyses.

(4) Developing probabilistic coastal flooding, including high tide flooding, and storm surge estimates to complement worst-case scenario estimates, including for use in long-term planning and risk management by States, Tribal governments, localities, and emergency managers in coordination with the Federal Emergency Management Agency, as appropriate.

(5) Establishing skill metrics for coastal inundation forecasting that quantify the benefits of dynamical modeling, data assimilation, and machine learning improvements in the probabilistic forecast of coastal flooding, including high tide flooding, and storm surge risk and impacts.

(6) Improving operational regional storm surge models and, in collaboration with the United States Geological Survey, wave prediction models to enhance probabilistic guidance and messaging.

(7) Improving the understanding and capacity of coastal communities to receive and respond to rip current forecasts and information.

(d) INNOVATIVE OBSERVATIONS AND MODELING.—The Under Secretary shall ensure the program periodically examines, tests, and evaluates the value of incorporating enhanced model physics, hybrid dynamical or machine learning-based prediction systems, and innovative observations, such as novel sensor technologies, observation networks, crewed or uncrewed systems, and hosted instruments on commercial aircraft, vessels, and satellites, with respect to the improvement of coastal flooding, including high tide flooding, and storm surge forecasts, predictions, and warnings.

(e) PROGRAM PLAN.—Not later than 180 days after the date of the enactment of this Act, the Under Secretary shall develop a plan that details the specific research, development, data acquisition, and technology transfer activities, and corresponding resources and timelines, necessary to achieve the goal of the program under subsection (b).

(f) ANNUAL BUDGET FOR PLAN SUBMITTAL.—After the development of the plan pursuant to subsection (e), the Under Secretary shall submit to Congress, with the budget of the President submitted under section 1105 of title 31, United States Code, for a fiscal year, a proposed budget for the activities identified in that plan for that fiscal year.

SEC. 207. IMPROVING PREVENTION AND RESPONSES TO TEMPERATURE RELATED IMPACTS.

(a) ESTABLISHMENT.—The Under Secretary shall establish within the National Oceanic and Atmospheric Administration a system to support the reduction of extreme temperature impacts by—

(1) improving the delivery and communication of data, information, forecasts, and warnings related to extreme temperatures;

(2) developing science-based solutions and tools to improve impact-based decision support services for extreme impacts to—

(A) protect human life, property, and the United States economy; and

(B) support the unique needs of—

(i) emergency preparedness and response activities; and

(ii) urban, rural, and suburban communities; and

(3) supporting a research program on health impacts from extreme temperatures, in coordination with relevant agencies.

(b) METHODOLOGY.—The Under Secretary shall, in collaboration with relevant agencies—

(1) coordinate with State and local entities to improve the quality of data on deaths and related illnesses attributed to extreme temperatures; and

(2) make public the methodology for attributing adverse health impacts to extreme temperatures.

(c) PRIORITIZATION.—The Under Secretary shall give priority to activities under subsection (a) that support the reduction of adverse impacts due to extreme temperatures that—

(1) cause the most fatalities in the United States; and

(2) are frequent and severe.

(d) INTERAGENCY COMMITTEE.—There is established within the National Oceanic and Atmospheric Administration an interagency committee that shall coordinate relevant agencies to execute, as appropriate, activities across such agencies to ensure a united Federal approach to reducing health risks from extreme temperatures.

(e) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated to the National Oceanic and Atmospheric Administration to carry out this section, including for any administrative costs for the Committee and the System, $2,700,000 for each of fiscal years 2027 through 2031.

SEC. 208. AVIATION WEATHER AND DATA INNOVATION.

(a) AIRBORNE OBSERVATION PROGRAM.—

(1) IN GENERAL.—The Under Secretary shall maintain an airborne observation program (in this subsection referred to as the ''program'') for the acquisition of atmospheric sensor data and the deployment of critical atmospheric sensors, including in partnership with the weather enterprise.

(2) ACTIVITIES.—The program shall include activities that carry out the following:

(A) Procurement of weather data available from commercial aircraft, as determined by the Under Secretary.

(B) Acquisition of additional vertical profile observations that provide spatial and temporal density, as determined by the Under Secretary.

(C) Analysis of procured data when incorporated into the unified forecast system of the

National Oceanic and Atmospheric Administration in order to provide improved forecast information for aircraft.

(3) BUDGET.—The Under Secretary shall submit to Congress, with the budget of the President submitted under section 1105 of title 31, United States Code, for a fiscal year, a proposed budget for the activities described in paragraph (2) for that fiscal year, including an analysis of activities that can be complemented by aircraft of the National Oceanic and Atmospheric Administration.

(4) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated $10,000,000 for each of fiscal years 2027 through 2031 to carry out the program.

(b) AVIATION WEATHER AND TURBULENCE FORECASTING.—

(1) IN GENERAL.—The Director of the National Weather Service shall—

(A) include turbulence events, icing conditions, or other phenomena in the forecasting capabilities of the Aviation Weather Center and the Center Weather Service Units; and

(B) deliver operational forecasts with consistent, timely, and accurate weather and turbu-

lence information for the airspace system and the protection of lives and property.

(2) COORDINATION.—In carrying out paragraph (1), the Director of the National Weather Service shall—

(A) give consideration to recommendations of the Administrator of the Federal Aviation Administration under section 44720 of title 49, United States Code; and

(B) improve weather and turbulence forecasting capabilities by—

(i) designating or establishing within the Federal Government an interagency working group to determine weather and environmental data or observation requirements, needs, and potential solutions related to aviation weather and turbulence modeling or forecasting;

(ii) identifying current and future potential data gaps related to turbulence events or phenomena that can—

(I) identify or inform route-specific flight planning; and

(II) be supplemented or filled by commercial aviation tools;

(iii) transitioning research initiatives and pilot programs, including a pilot program of instrumentation deployed on commercial aircraft for observing atmospheric composition and other atmospheric factors and support for the evaluation of a sustained observing network using such instrumentation, into operations that improve the forecasting capabilities of the Aviation Weather Center;

(iv) developing and deploying improved probabilistic aviation weather forecast guidance technology;

(v) updating interagency agreements as appropriate, including to address reimbursable agreements; and

(vi) recommending adequate staffing levels at each Center Weather Service Unit to ensure safety.

(c) NEXT GENERATION AVIATION RESEARCH.—Section 102(b)(3) of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8512(b)(3)), as amended by section 111(a) of this Act, is further amended—

(1) by redesignating subparagraphs (F) and (G) as subparagraphs (G) and (H), respectively; and

(2) by inserting after subparagraph (E) the following:

''(F) aviation weather phenomena, including atmospheric composition and turbulence, to improve scientific understanding and forecast capabilities for the airspace system;''.

(d) AVIATION INFORMATION DISSEMINATION.—The Under Secretary shall ensure the Aviation Weather Center is able, to the maximum extent possible, to disseminate in a timely manner full-resolution aviation weather data, forecasts, and information to meet the needs of aviation users.

(e) PROVISION OF WEATHER SERVICES TO THE FEDERAL AVIATION ADMINISTRATION.—

(1) INTERAGENCY AGREEMENT AND SUPPLEMENTAL SERVICES.—

(A) IN GENERAL.—The Under Secretary and the Administrator of the Federal Aviation Administration shall enter into or otherwise participate in an interagency agreement for a period of not less than 5 years under which the National Oceanic and Atmospheric Administra-

tion provides weather services to the Federal Aviation Administration.

(B) REQUEST FOR PROPOSALS.—To inform the interagency agreement under subparagraph (A), the Administrator of the Federal Aviation Administration shall, in consultation with the Under Secretary, request proposals from the weather enterprise to evaluate commercial opportunities to supplement, and not replace, weather services or data at center weather service units provided by the National Oceanic and Atmospheric Administration.

(C) COMPENSATION.—The interagency agreement under subparagraph (A) shall ensure that the Administrator of the Federal Aviation Administration fairly compensates the National Oceanic and Atmospheric Administration, in a timely manner, for utilizing services under this agreement.

(2) BRIEFINGS.—Not later than 90 days after the date of the enactment of this Act, and every 90 days thereafter through December 31, 2030, the Under Secretary and the Administrator of the Federal Aviation Administration shall provide a briefing to the Committee on Science, Space, and Technology

of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate on the status of—

(A) the provision by the National Oceanic and Atmospheric Administration of weather services to the Federal Aviation Administration;

(B) the interagency agreement under paragraph (1); and

(C) rationale for any recommendations made by the National Weather Service under this section that were not implemented by the Federal Aviation Administration.

SEC. 209. AERIAL SNOW SURVEY PROGRAM.

(a) IN GENERAL.—The Under Secretary shall maintain and modernize the Aerial Snow Survey program to support water supply forecasting, flood risk management, and seasonal outlooks.

(b) PURPOSE.—Such program shall—

(1) collect airborne snow water equivalent measurements across major river basins;

(2) integrate such measurements into forecasts and decision-support products generated by National Weather Service River Forecast Centers;

(3) improve seasonal runoff, flood, and drought outlooks; and

(4) coordinate with State water resource agencies and emergency managers.

(c) MODERNIZATION.—In carrying out such program, the Under Secretary may upgrade aircraft instrumentation and data assimilation tools to enhance forecast skill.

SEC. 210. NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE PARTNERSHIP PROGRAM, TRANSITION PROGRAM, AND OPERATIONAL PLANNING.

(a) PARTNERSHIP PROGRAM.—

(1) IN GENERAL.—The Assistant Administrator of the National Environmental Satellite, Data, and Information Service (in this section referred to as the ''Assistant Administrator'') shall maintain a program to enhance engagement with the private sector, academia, and other Federal departments and agencies (in this subsection referred to as the ''partnership program'').

(2) ADMINISTRATION.—The Assistant Administrator, in consultation with the Administrator of the National Aeronautics and Space Administration, shall administer broad agency announcements and other transactional authority or contracting mechanisms, on an annual or more frequent basis, to support the partnership program.

(b) TRANSITION PROGRAM.—

(1) IN GENERAL.—To support the development of next-generation technologies, missions, data systems, spacecraft, and instrument design, the Assistant Administrator, in consultation with the Administrator of the National Aeronautics and Space Administration, shall maintain a program to transition selected awards from research and study phases into demonstration (in this subsection referred to as the ''transition program'').

(2) CONSIDERATIONS.—In selecting awardees for demonstrations under the transition program, the Assistant Administrator shall consider technologies, missions, data systems, spacecraft, and instrument design that—

(A) improve upon the satellite architecture of the National Oceanic and Atmospheric Administration;

(B) have a direct impact on implementing the recommendations of the Satellite Observing System Architecture Study of the National Oceanic and Atmospheric Administration entitled, ''Building a Plan for NOAA's 21st Century Satellite Observing System'' and dated May 31, 2018; and

(C) meet current or future mission requirements.

(3) OPERATIONAL PLANNING.—In carrying out the transition program, the Assistant Administrator shall monitor demonstration phase progress and plan for promising results that meet mission requirements to be transitioned into the operational satellite architecture of the National Oceanic and Atmospheric Administration.

(c) ANNUAL BRIEFING.—Not later than 1 year after the date of the enactment of this Act, and annually thereafter through 2031, the Assistant Administrator 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 an annual briefing that outlines the progress made in the partnership program under subsection (a), the transition program under subsection (b), and operational planning under subsection (b)(3).

(d) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated to the National Environmental Satellite, Data, and Information Service, $20,000,000 for each of fiscal years 2027 through 2031 to carry out this section.

SEC. 211. ADVANCED WEATHER INTERACTIVE PROCESSING SYSTEM.

(a) IN GENERAL.—The Under Secretary, acting through the Director of the National Weather Service, shall develop a strategy to transition operations of the Advanced Weather Interactive Processing System to an operational cloud-based environment in order to improve operational efficiency.

(b) SERVICES.—The Under Secretary shall ensure that the Advanced Weather Interactive Processing System in an operational cloud-based environment referred to in subsection (a) provides impact-based decision support services to emergency managers at the Federal, State, local, and Tribal levels, and continues to provide the following services:

(1) Integrating and displaying forecast data, including meteorological, hydrological, climate, ocean, satellite, and radar data, for field offices and national centers of the National Weather Service.

(2) Acquiring and processing observational data from sensors and local sources.

(3) Providing an interactive communications system, including any relevant capabilities of the existing satellite broadcast network, to connect relevant employees and sites of the National Weather Service.

(4) Initiating the dissemination of weather, water, marine, ecological, subseasonal to seasonal, aviation, and space warnings and forecasts in a rapid and highly reliable manner.

(c) ELEMENTS.—The transition of operations required under subsection (a) may include the following:

(1) Establishment or support of testbeds, pilot projects, and functional testing activities to facilitate remote evaluation and automated testing.

(2) Coordinated training efforts needed for Federal and non-Federal users and operators of the Advanced Weather Interactive Processing System in an operational cloud-based environment referred to in subsection (a).

(3) Evaluation of bandwidth requirements to achieve a quality user experience.

(4) Installation of circuits to reduce lapses in network operations and support backup functions.

(5) Establishment of a cloud-based, remotely accessible repository for data referred to in subsection (b)(2).

(6) Development and deployment of virtualized systems to replace physical hardware at operational sites.

(7) Evaluation of commercial cloud providers, including hybrid approaches, to meet mission needs.

(8) Development, testing, demonstration, evaluation, and operationalization of forecast and warning products, consistent with the mission and scientific expertise of the National Oceanic and Atmospheric Administration.

(d) TRANSITION DEADLINE.—The Under Secretary shall take such actions as may be necessary to ensure the transition described in subsection (a) is completed by not later than September 30, 2030.

(e) UPDATES TO CONGRESS.—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 periodic updates on the implementation of this section.

(f) CONTINUED INNOVATION.—Nothing in this section may be construed as prohibiting the development of new forecast capabilities, sub-systems, or implementing modeling advancements on the operational computing systems of the Administration.

SEC. 212. REANALYSIS AND REFORECASTING.

The Under Secretary may support reanalysis and reforecasting activities within the National Oceanic and At-

mospheric Administration, including through weather testbeds of the Administration—

(1) for improving weather forecasts, extreme weather predictions, and weather and climate datasets, including supporting forecast development and forecaster training; and

(2) to support the development, evaluation, and improvement of artificial intelligence and machine learning data-driven models, including by improving the standardization, formatting, and accessibility of datasets to support effective use in such models.

SEC. 213. NATIONAL WEATHER SERVICE WORKFORCE.

(a) HIRING ASSESSMENT.—

(1) IN GENERAL.—Not later than 1 year after the date of the enactment of this Act, and annually thereafter, the Director of the National Weather Service shall submit to the Under Secretary and Congress an assessment of the milestones, timelines, and service level expectations required for the expeditious hiring and timely onboarding of employees of the National Weather Service.

(2) ELEMENTS.—Each assessment required by paragraph (1) may include the following:

(A) Recommendations to outsource hiring to any entity other than the National Weather

Service in order to meet the milestones, timelines, and service level expectations described in paragraph (1).

(B) Determinations of the number of staff and designated positions required at each forecasting office to provide services to protect lives and property in the geographic region of responsibility.

(b) HEALTH AND MORALE ASSESSMENT.—

(1) IN GENERAL.—The Director of the National Weather Service shall enter into a contract with, or continue to partner with, an entity other than the National Weather Service to conduct an assessment of medical impacts, including stress and long-term health impacts, on employees of the National Weather Service related to required rotating shift work.

(2) ELEMENTS.—The assessment required by paragraph (1) may include—

(A) options for mitigating the impacts on employees described in that paragraph; and

(B) recommendations for improving benefits related to required rotating shift work.

(c) ROLE OF THE DIRECTOR.—Notwithstanding the results of the assessment under subsection (a), the Direc-

tor of the National Weather Service shall establish service level standards based on staffing levels.

(d) DESIGNATION AND RESPONSIBILITIES OF SERVICE COORDINATION HYDROLOGISTS.—

(1) IN GENERAL.—The Director of the National Weather Service may designate at least one service coordination hydrologist at each Weather Forecast Office of the National Weather Service.

(2) PERFORMANCE BY OTHER EMPLOYEES.—Notwithstanding paragraphs (3) and (4), the Director of the National Weather Service may assign the performance of the responsibilities described in this subsection to such other staff of the National Weather Service as the Director considers appropriate.

(3) RESPONSIBILITIES.—In order to increase impact-based decision support services, each service coordination hydrologist designated under paragraph (1) shall, with respect to hydrology, carry out the following:

(A) Provide service to the geographic area of responsibility covered by the Weather Forecast Office at which the service coordination hydrologist is employed to help ensure that users of products and services of the National Weath-

er Service can respond effectively to improve outcomes from flood events.

(B) Liaise with users of products and services of the National Oceanic and Atmospheric Administration, such as emergency managers, the public, academia, media outlets, users in the hydropower, transportation, recreation, and agricultural communities, and forestry, land, fisheries, and water management interests, to evaluate the adequacy and usefulness of the products and services referred to in subparagraph (A), including extended-range streamflow forecasts, water supply forecasts, drought outlooks, flood inundation mapping, coastal inundation, and flood warnings.

(C) Collaborate with the National Water Center, the River Forecast Centers, other Weather Forecast Offices, the National Integrated Drought Information System, offices of the National Oceanic and Atmospheric Administration, and Federal, State, local, and Tribal government agencies, as the Director considers appropriate, in developing, proposing, and implementing plans to develop, modify, or tailor

such products and services to improve the usefulness of such products and services.

(D) Engage in interagency partnerships with Federal, State, local, and Tribal government agencies to explore the use of forecast-informed reservoir operations to reduce flood risk and inform decisions related to water resources management.

(E) Ensure the maintenance and accuracy of flooding and water resource management partner call lists, appropriate office hydrologic service policy or procedures, and other hydrologic information or dissemination methodologies or strategies.

(F) Work closely with Federal, State, local, and Tribal emergency and floodplain management agencies, and other agencies relating to disaster management, to ensure a planned, coordinated, and effective preparedness and response effort.

(4) ADDITIONAL RESPONSIBILITIES.—A service coordination hydrologist designated under paragraph (1) may, with respect to hydrology—

(A) work with a State agency to develop plans for promoting more effective use of prod-

ucts and services of the National Weather Service throughout the State concerned;

(B) identify priority community preparedness objectives;

(C) develop plans to carry out the responsibilities described in paragraph (3); and

(D) conduct flooding event preparedness planning and citizen education efforts with and through various State, local, and Tribal government agencies and other disaster management-related organizations.

(e) PILOT PROJECTS.—

(1) IN GENERAL.—The Director of the National Weather Service shall—

(A) perform pilot projects for—

(i) transformational services related to decision support services and technology;

(ii) transitioning data and services to the cloud;

(iii) provision of on-site decision support for emergency management operations; and

(iv) transitioning to and communication of probabilistic models, forecasts, and hazard information; and

(B) conduct a study to assess the capabilities needed to scale those pilot projects toward a new and more efficient and effective operations model.

(2) SUNSET.—The authority under paragraph (1) shall terminate on the date that is 2 years after the date of the enactment of this Act.

(f) RULE OF CONSTRUCTION.—Nothing in this section may be construed to authorize or require a change in the authorized number of full-time equivalent employees of the National Weather Service or otherwise result in the employment of any additional employees.

(g) PROTECTION FROM HIRING FREEZES.—

(1) IN GENERAL.—Title IV of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8541 et seq.), as amended by section 114(a), is further amended by adding at the end the following:

"SEC. 410. CLASSIFICATION OF AND STAFFING PLAN FOR EMPLOYEES AND PROTECTION FROM HIRING FREEZES.

''(a) CLASSIFICATION OF CERTAIN EMPLOYEES.—

''(1) IN GENERAL.—Not later than 30 days after the date of the enactment of this section, the Director of the Office of Management and Budget

shall categorize each position in the National Oceanic and Atmospheric Administration specified under paragraph (2) as a protective service occupation under the Standard Occupational Classification System.

''(2) OCCUPATIONAL SERIES SPECIFIED.—The positions that are specified in this paragraph are positions in the National Oceanic and Atmospheric Administration that are—

''(A) determined by the Under Secretary to be involved in supporting forecasts and warnings to protect human life and property; and

''(B) determined by the Director of the Office of Personnel Management to be—

''(i) a position in the Engineering and Architecture occupational series listed under occupational series 0801, 0802, 0810, 0855, or 0856;

''(ii) a position in the Production Controller (Aircraft) occupational series (1152);

''(iii) a position in the Physical Sciences occupational series listed under occupational series 1301, 1313, 1315, 1340, 1341, 1360, 1370, or 1372;

"(iv) a position in the Equipment Specialist Series (Aircraft) occupational series (1670);

"(v) a position in the Information Technology Management occupational series (2210); or

"(vi) a position held by a professional mariner (as defined in section 269B of the National Oceanic and Atmospheric Administration Commissioned Officer Corps Act of 2002 (33 U.S.C. 3079b)), including a position in occupational series 0865, 9901, 9916, 9920, 9923–24, 9927–28, 9931–34, 9944, 9954, 9960, 9965, 9968, 9971, 9973, and 9984).

"(3) CONGRESSIONAL BRIEFING.—Not later than 1 year after the date of enactment of this section, the Under Secretary of Commerce for Oceans and Atmosphere shall provide a briefing on the implementation of this section to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate.

"(4) REQUIREMENTS RELATING TO STAFFING CHANGES.—

"(A) IN GENERAL.—Not less than 30 days before carrying out a significant workforce reduction action with respect to any occupational position specified under paragraph (2), 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 describing the proposed action and the facts and circumstances relied upon in support of such action.

"(B) SIGNIFICANT WORKFORCE REDUCTION ACTION DEFINED.—In this paragraph, the term 'significant workforce reduction action'—

"(i) means a voluntary separation incentive payment program, voluntary early retirement authority, or any other personnel action reasonably expected to result in the separation of multiple employees from the National Oceanic and Atmospheric Administration; and

"(ii) does not include routine attrition, individual adverse personnel actions, or any reduction in force for which notice

or reporting is otherwise required under Federal law.

"(b) 5-YEAR STAFFING PLAN FOR THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION.—

"(1) IN GENERAL.—Not later than 180 days after the date of the enactment of this section, the Under Secretary shall submit to Congress a 5-year staffing plan for—

"(A) the National Weather Service; and

"(B) any positions within the National Oceanic and Atmospheric Administration that support forecasts and warnings to protect human life and property, including positions that involve—

"(i) collection of data for incorporation into watches and warnings;

"(ii) operation and maintenance of equipment for collection of data described in clause (i);

"(iii) maintenance of information technology systems;

"(iv) modeling for forecasts and warnings; and

"(v) research to improve forecasts, warnings, and communication of those

warnings to better protect human life and property.

''(2) ADDITIONAL ELEMENTS OF STAFFING PLAN.—The staffing plan under this subsection shall include the following elements:

''(A) The number and corresponding occupational series of employees needed to fully staff each weather forecast office and Center Weather Service Unit of the National Weather Service to meet mission needs while considering the following:

''(i) Safety.

''(ii) Morale.

''(iii) Changing seasonal needs.

''(iv) Forecasting complexity of the geographical area at issue, particularly areas that are subject to an elevated risk of severe weather events.

''(B) Historical staffing needs versus historical vacancies for each weather forecast office and Center Weather Service Unit.

''(c) DIRECT HIRE AUTHORITY.—

''(1) IN GENERAL.—To satisfy critical staffing needs and fill vacancies consistent with the staffing plan under subsection (b), the Director of the Na-

tional Weather Service may appoint, without regard to sections 3308 through 3319, 3327, and 3330 of title 5, United States Code, qualified candidates to any of the following positions:

"(A) Employees performing public safety mission functions, including the following:

"(i) Meteorologists (classification series 1340).

"(ii) Hydrologists (classification series 1315).

"(iii) General physical scientists (classification series 1301).

"(iv) Computer specialists (classification series 2210).

"(v) Electronic technicians (classification series 0856).

"(B) Other positions for which primary responsibilities include equipment operations, maintenance, analysis, information technology, or engineering.

"(2) SUNSET.—The authority under paragraph (1) shall expire on the earlier of—

"(A) the date on which all positions to satisfy critical staffing needs and vacancies identified under subsection (b) are filled; or

''(B) 2 years after the date of enactment of the Weather Research and Forecasting Innovation Reauthorization Act of 2026.''.

(2) CLERICAL AMENDMENT.—The table of contents for the Weather Research and Forecasting Innovation Act of 2017 is amended by inserting after the item relating to section 409 the following:

''Sec. 410. Classification of and staffing plan for employees and protection from hiring freezes.''.

SEC. 214. CONSULTATION RELATING TO MODERNIZATION AND REORGANIZATION.

The Director of the National Weather Service may consult with employees and employee representatives of the National Weather Service during implementation of modernization or reorganization plans for the Service.

SEC. 215. ARTIFICIAL INTELLIGENCE FOR WEATHER FORECASTING.

(a) DEFINITIONS.—In this section:

(1) ARTIFICIAL INTELLIGENCE.—The term ''artificial intelligence''—

(A) has the meaning given that term in section 5002 of the National Artificial Intelligence Initiative Act of 2020 (15 U.S.C. 9401); and

(B) includes machine learning, neural networks, and natural language processing.

(2) ARTIFICIAL INTELLIGENCE WEATHER MODEL.—The term ''artificial intelligence weather model'' means a weather model based primarily on artificial intelligence technology to project future Earth system conditions based on machine learning using weather forecasting training datasets.

(3) CURATE.—The term ''curate'', with respect to a dataset, means—

(A) to collect and maintain the dataset—

(i) to ensure and document its quality; and

(ii) to provide metadata on its provenance; and

(B) to update the dataset periodically, as appropriate and practicable.

(4) NUMERICAL WEATHER MODEL.—The term ''numerical weather model'' means a weather model based primarily on coupled Earth System processes that uses numerical computation to forecast future Earth system conditions.

(5) OBSERVATIONAL DATA.—The term ''observational data'' means data and metadata from actual observations of environmental conditions, including remote sensing and in situ platforms.

(6) SYNTHETIC DATA.—The term ''synthetic data'' means data produced from a model or statistical method in order to fill gaps in observational data.

(b) PURPOSE.—The purpose of this section is—

(1) to improve accuracy and timeliness of weather, water, and space weather forecasts and effective dissemination of critical information;

(2) to strengthen analytic capacity to inform resource deployments in response to and to mitigate harm from weather, water, wildfires, and space weather hazards through the mandated exploration and use of artificial intelligence by Federal departments and agencies;

(3) to strengthen public-private partnerships to accelerate adoption and outcomes of the use of artificial intelligence in response to and to mitigate such harm; and

(4) to strengthen public-private partnerships in highly technical, high-risk, and high-reward fields related to weather, water, wildfires, and space weather forecasts.

(c) EARTH SYSTEM FORECASTING AND INFORMATION DELIVERY.—

(1) TRAINING DATASETS.—Not later than 4 years after the date of the enactment of this Act, the Under Secretary, in consultation with the Secretary of Energy, the Administrator of the National Aeronautics and Space Administration, the Director of the National Science Foundation, the Director of the National Center for Atmospheric Research, the Interagency Council for Advancing Meteorological Services, other appropriate Federal advisory committees as determined by the Under Secretary, and such other technical experts as the Under Secretary considers appropriate, shall develop and curate comprehensive weather forecasting training datasets with relevant Earth system data, quality information, and metadata necessary for weather forecasting.

(2) USE OF EXISTING DATASETS.—In order to speed the development of the weather forecasting training datasets required under paragraph (1), the Under Secretary shall assess, and to the greatest extent practicable build on, existing Earth system reanalysis datasets of the Federal Government.

(3) ARTIFICIAL INTELLIGENCE WEATHER MODEL.—

(A) GLOBAL MODEL.—In carrying out this subsection, the Under Secretary, in consultation with appropriate Federal advisory committees as determined by the Under Secretary, may develop and test a global weather model based on artificial intelligence technologies utilizing data of the National Oceanic and Atmospheric Administration to the extent possible.

(B) REGIONAL AND LOCAL MODELS.—In addition to a global weather model under subparagraph (A), the Under Secretary may experiment with regional and local weather models based on artificial intelligence technologies.

(4) USE OF ARTIFICIAL INTELLIGENCE TO DISSEMINATE INFORMATION.—In coordination with an artificial intelligence weather model or models developed under paragraph (3), the Under Secretary may explore the use of artificial intelligence to enhance the dissemination of information with respect to weather and wildfire risks and evaluate the effectiveness of communication for improved public understanding and preparedness.

(5) CONTINUED SUPPORT FOR OBSERVATIONS, BASIC RESEARCH, AND NUMERICAL WEATHER MODELS.—Notwithstanding the requirements of this sub-

section, the Under Secretary shall continue to support and advance the activities of the National Oceanic and Atmospheric Administration—

(A) to collect and acquire traditional and novel observational data relevant for artificial intelligence and numerical weather, water, and space weather forecasting;

(B) to advance research on the Earth system and numerical weather model forecasting;

(C) to develop and advance numerical Earth system modeling for predictions;

(D) to develop weather model data post-processing techniques; and

(E) to improve data assimilation techniques.

(6) OBSERVING SYSTEM COVERAGE.—In carrying out this subsection, the Under Secretary may evaluate the use of cost functions in data-driven machine learning model training to balance inequities in observing system coverage and data poor areas.

(7) UNCERTAINTY QUANTIFICATION RESEARCH.—In carrying out this subsection, the Under Secretary may develop uncertainty quantification research for the purpose of accurate environmental

risk and hazard communications of probabilistic predictions and forecasts.

(8) REPORT.—Not later than 2 years after the date of the enactment of this Act, and not less frequently than every 2 years thereafter through 2036, 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 on the activities conducted under this subsection.

(d) ADVANCED ARTIFICIAL INTELLIGENCE APPLICATIONS FOR WEATHER FORECASTS AND INFORMATION DELIVERY.—The Under Secretary shall explore advanced applications of artificial intelligence to improve weather forecasts and information delivery, such as by—

(1) improving data assimilation;

(2) accounting for coupled Earth system processes;

(3) improving readiness and preparedness to combat wildfires, mitigation of the risk from wildfires, and improving safety for firefighters and communities at risk from wildfires;

(4) using artificial intelligence weather models to generate ensemble forecasts to more accurately assess flow-dependent forecast uncertainties; and

(5) improving impact-based decision support for greater societal benefits based on those forecasts.

(e) TECHNICAL ASSISTANCE ON USE OF ARTIFICIAL INTELLIGENCE WEATHER, WATER, AND SPACE WEATHER MODELS.—

(1) IN GENERAL.—The Under Secretary shall provide—

(A) technical assistance, data access, and support for forecasters, scientists, social scientists, and engineers to test and evaluate the use and effectiveness of the artificial intelligence models of the National Oceanic and Atmospheric Administration, including within the testbeds of the Administration;

(B) best practices on providing forecasts based on outputs from artificial intelligence weather models and numerical weather models, or a combination thereof; and

(C) support for emergency managers to make operational decisions based on outputs from artificial intelligence weather models and numerical weather models, or a combination thereof.

(2) ASSESSMENT OF WEATHER MODELS.—

(A) IN GENERAL.—The Under Secretary shall support the development of a common framework for the assessment of numerical weather models and artificial intelligence weather models by comparing model output and observational data over a period of time in the past through the use of such methodologies as the Under Secretary considers appropriate.

(B) BEST PRACTICES.—In carrying out this paragraph, the Under Secretary may develop and disseminate best practices in collaboration with—

(i) the National Institute of Standards and Technology, the National Aeronautics and Space Administration, the National Science Foundation, and the Department of Energy;

(ii) academic and research institutions; and

(iii) the private sector.

(3) TECHNICAL ASSISTANCE.—In carrying out this subsection, the Under Secretary may provide technical assistance, best practices, and support required under paragraph (1) through the National Weather Service.

(4) INDEPENDENT STUDY ON THE IMPACTS OF ARTIFICIAL INTELLIGENCE WEATHER, WATER, AND SPACE WEATHER MODELS.—The Under Secretary may enter into an agreement with the National Academy of Sciences or another entity as determined appropriate by the Under Secretary to assess the impacts of artificial intelligence weather models on the weather enterprise and make recommendations to improve the integration of such models in operational forecasting.

(f) PARTNERSHIPS FOR TRANSFORMATIONAL INNOVATION.—

(1) IN GENERAL.—The Under Secretary may explore novel structures for partnerships with private, academic, and international entities for research and development of transformative innovation in weather forecasting and other environmental forecasts—

(A) to further the understanding of weather, water, wildfires, and space weather, and their societal impact;

(B) to advance the science of weather and water forecasting, including subseasonal to seasonal forecasting; and

(C) to develop, evaluate, and transition artificial intelligence weather, water, and hazard forecasting applications to operations.

(2) CO-INVESTMENT.—Subject to applicable law, the Under Secretary may consider and adopt novel co-investment strategies with the private, academic, and international sectors to carry out paragraph (1), including—

(A) non-Federal Government contributions to resource and support high-risk, high-return research and development in environmental forecasting, data science, artificial intelligence, and related fields;

(B) shared rights to intellectual property from research and development activities under this subsection; and

(C) other approaches to sharing resources and results under this subsection.

(g) AVAILABILITY OF DATASET.—

(1) IN GENERAL.—The Under Secretary shall develop and implement a plan to make available to the public, at no cost and subject to applicable law and policy, the following:

(A) Operational artificial intelligence weather models developed by the National Oceanic and Atmospheric Administration.

(B) Artificial intelligence weather models that are not operational models, including experimental and developmental models, as the Under Secretary determines appropriate.

(C) Applicable information and documentation for artificial intelligence weather models described in subparagraphs (A) and (B), including a description of intended model outputs.

(D) Subject to subsection (i), all data owned by the Federal Government and data that the Under Secretary has the legal right to redistribute that are associated with artificial intelligence weather models made available to the public pursuant to the plan and used in operational forecasting by the Administration, including—

(i) relevant metadata; and

(ii) data used for operational artificial intelligence weather models used by the Administration.

(2) ACCOMMODATIONS.—In developing and implementing the plan under paragraph (1), the Under

Secretary may make such accommodations as the Under Secretary considers appropriate to ensure that the public release of any artificial intelligence weather model, information, documentation, or data pursuant to the plan does not jeopardize—

(A) national security;

(B) intellectual property or redistribution rights, including under titles 17 and 35, United States Code;

(C) any trade secret or commercial or financial information subject to section 552(b)(4) of title 5, United States Code;

(D) any models or data that are otherwise restricted by contract or other written agreement; or

(E) the mission of the Administration to protect lives and property.

(3) REPORT.—

(A) IN GENERAL.—Not later than 1 year after the date of the enactment of this Act, the Under Secretary shall submit to Congress a report, in both unclassified and classified form, regarding the risks to the economic and intellectual security of the United States from foreign

countries of concern through access by those countries to weather data in the United States.

(B) ELEMENTS.—The report required under subparagraph (A) shall include—

(i) a full analysis of the national, intellectual, and economic security implications for the United States with respect to intellectual property theft or cyber or human espionage through access to weather data; and

(ii) conclusions of the Under Secretary and recommendations for legislative and administrative action, if any.

(C) FOREIGN COUNTRY OF CONCERN DEFINED.—In this paragraph, the term ''foreign country of concern'' has the meaning given that term in section 9901 of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (15 U.S.C. 4651).

(h) RETENTION OF FEDERAL GOVERNMENT EXPERTISE.—Subject to applicable law, the Under Secretary may consider novel methods to recruit, retrain, and retain expert personnel to support activities under this section, including by—

(1) using methods to be competitive with salaries outside the Federal Government;

(2) developing staff exchange programs and training programs; and

(3) leveraging applicable hiring and retention strategies authorized for Federal departments and agencies.

(i) PROTECTION OF NATIONAL SECURITY INTERESTS.—

(1) IN GENERAL.—Notwithstanding any other provision of this section, the Under Secretary, in consultation with the Secretary of Defense, as appropriate, may withhold models or data used under this section if the Under Secretary determines doing so to be necessary to protect the national security interests of the United States.

(2) RULE OF CONSTRUCTION.—Nothing in this section shall be construed to supersede any other provision of law governing the protection of the national security interests of the United States.

(j) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated to the Under Secretary to carry out this section—

(1) for fiscal year 2027, $105,000,000; and

(2) for each of fiscal years 2028 through 2031, $25,000,000.

SEC. 216. COMPOSITION OF THE ATMOSPHERE AND ATMOSPHERIC OBSERVATIONS.

(a) ASSESSMENTS.—Not later than 2 years after the date of the enactment of this Act, the Under Secretary shall submit to the appropriate committees of Congress a report that includes the following:

(1) An identification of Federal observation capabilities and data gaps related to the composition of Earth's atmosphere, including the troposphere and stratosphere.

(2) An analysis of Federal efforts that advance scientific understanding of the effects on the Earth's radiation budget of direct or indirect actions that may change the composition of Earth's atmosphere.

(3) The current and projected use of ground-based, space-based, and maritime-based remote and in situ sensing capabilities, autonomous and manned aerial platforms, and other commercially available technologies and platforms of opportunity to accelerate research and increase observations and monitoring of Earth's atmosphere.

(4) Recommendations for the adaptation or expansion of technologies and platforms identified under paragraph (3).

(5) An identification and prioritization of additional observation and analysis capabilities needed to ensure comprehensive monitoring that detects future changes in atmospheric composition.

(b) CONSIDERATIONS.—In preparing an assessment required by subsection (a), the Under Secretary shall consider and use, as appropriate, reports and studies conducted by Federal departments and agencies, the National Research Council, or other entities.

(c) PILOT PROJECTS.—

(1) IN GENERAL.—The Under Secretary may conduct pilot projects of atmospheric composition observational systems and platforms including—

(A) the use of atmospheric observing instruments on commercial and uncrewed aircraft;

(B) the use of atmospheric and oceanic observing instruments on uncrewed ocean surface platforms or deployed on commercial or other nondedicated ocean vessels; and

(C) in situ observation capability to conduct regular atmospheric observations of the troposphere and stratosphere.

(2) CONSULTATION AND COORDINATION.—The Under Secretary shall consult and coordinate with relevant Federal departments and agencies to develop processes for the appropriate deployment of systems and platforms pursuant to pilot projects conducted under paragraph (1).

(d) AUTHORITY TO ENTER INTO AGREEMENTS.—Notwithstanding any other provision of law, the Under Secretary may enter into agreements, to the extent necessary to carry out this section, with governmental and nongovernmental entities—

(1) for the purchase of atmospheric composition data from commercial providers;

(2) for the hosting of observational instruments on government or private platforms; and

(3) to leverage data from international platforms as appropriate.

(e) DEFINITION OF APPROPRIATE COMMITTEES OF CONGRESS.—In this section, the term ''appropriate committees of Congress'' means—

(1) the Committee on Science, Space, and Technology of the House of Representatives; and

(2) the Committee on Commerce, Science, and Transportation of the Senate.

SEC. 217. PROJECT TO IMPROVE FORECASTS OF COASTAL MARINE FOG.

(a) IN GENERAL.—The Under Secretary shall conduct a project to improve forecasts of coastal marine fog.

(b) GOAL.—The goal of the project required under subsection (a) is to enhance vessel safety and reduce the economic impact of coastal marine fog events, with a focus on—

(1) increasing the number of marine-based observations through additional Federal platforms and commercially acquired observations in locations where impacts from marine fog and reduced visibility have major safety and economic impacts, including through the use of—

(A) buoys;

(B) meteorological stations measuring visibility, temperature, dewpoint, and wind speed and direction as a stand-alone or co-located with water level sensors, such as those that are part of the physical oceanographic observation system program of the National Oceanic and Atmospheric Administration;

(C) stationary platforms or drifting instruments;

(D) vessels;

(E) unmanned systems;

(F) remote sensing technologies, including rapid refresh hyperspectral satellite imagery; and

(G) advanced algorithms that extract actionable information from observational data, including early detection and regular monitoring of marine fog;

(2) advancing geographic coverage, resolution, skill, and accuracy of marine fog modeling, including, when feasible, additional locations and advancements in marine channel forecast capability;

(3) improving communication of marine fog advisories by the National Oceanic and Atmospheric Administration;

(4) communicating risks posed by hazardous marine fog events in a way that maximizes informed decision making by the public; and

(5) providing decision support services based on environmental information that is actionable to the recipient of a marine fog advisory.

(c) STAKEHOLDER ENGAGEMENT.—In implementing the project required under subsection (a), the Under Secretary shall meet with public and private stakeholders regarding the planning, development, and implementation of the project.

(d) TRIBAL ENGAGEMENT.—The Under Secretary shall meet with Indian tribes (as defined in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 5304)) regarding the planning, development, and implementation of the project required under subsection (a).

(e) PROJECT PLAN.—Not later than 1 year after the date of the enactment of this Act, the Under Secretary shall develop a plan for the project required under subsection (a) that details the specific research, development, and technology transfer activities, as well as corresponding resources and timelines, necessary to achieve the goal set forth under subsection (b).

SEC. 218. MODERNIZATION OF NWS ALERTING SYSTEMS.

(a) IN GENERAL.—Subject to the availability of appropriations, the Director of the National Weather Service shall improve the accessibility, onboarding, and functionality of National Weather Service alerting services, such as the Interactive National Weather Service or any successor system.

(b) CONSULTATION.—In carrying out this section, the Under Secretary shall consult with core partners, including public safety officials, schools, camps, and outdoor recreation providers.

(c) MODERNIZATION.—The improvements required under this section shall include—

(1) enhanced access to geographically targeted severe weather notifications through existing communication channels, including text and email;

(2) the ability to integrate the National Weather Service alerts into external communication systems through application programming interfaces, or similar tools; and

(3) enhancements to existing platforms and services to better support core partners responsible for public safety.

TITLE III—COMMERCIAL WEATHER AND ENVIRONMENTAL OBSERVATIONS

SEC. 301. COMMERCIAL DATA PROGRAM.

Section 302 of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8532) is amended to read as follows:

"SEC. 302. COMMERCIAL DATA PROGRAM.

''(a) SENSE OF CONGRESS.—It is the sense of Congress that operational data acquired by the National Oceanic and Atmospheric Administration through the Commercial Data Program established under subsection (b) that supports life and property should be licensed for free, unrestricted, and open redistribution to serve the public, scientific, and commercial sectors.

''(b) PROGRAM ESTABLISHMENT.—The Under Secretary, in coordination with the heads of appropriate offices of the National Oceanic and Atmospheric Administration, shall maintain a program, to be known as the 'Commercial Data Program', to coordinate and execute acquisition of weather and environmental data and services from private sector entities for operational use.

''(c) PROGRAM ELEMENTS.—The Under Secretary may acquire satellite, ground-based, airborne, or marine-based in situ, remote sensing, or crowd-sourced data and services for operational use relating to weather and environmental forecasting and modeling.

''(d) COORDINATION AND COLLABORATION.—The Under Secretary shall ensure the Commercial Data Program coordinates, collaborates, and ensures access to data across the Administration, including among the following:

''(1) The National Mesonet Program.

''(2) The Aircraft Based Observation Program.

''(3) The National Integrated Drought Information System, including the National Coordinated Soil Moisture Monitoring Network.

''(4) The National Integrated Flood Information System.

''(5) The U.S. Integrated Ocean Observation Program, including existing regional associations.

''(6) The Global Ocean Monitoring and Observing Program.

''(7) The National Data Buoy Center.

''(8) The Uncrewed Systems Operation Center.

''(9) The Ocean Exploration Program.

''(10) Any other program or office the Under Secretary determines appropriate.

''(e) STANDARDS AND SPECIFICATIONS.—Not later than 180 days after the date of enactment of the Weather Research and Forecasting Innovation Reauthorization Act of 2026 and on a continuous basis thereafter, the Under Secretary shall publish data, metadata, and service standards and specifications required for acquired observation services and data for use, licensing, and attribution to ensure quality, impact, and compatibility of such services and data with National Oceanic and Atmospheric Administration modeling capabilities, meteorological situational awareness, and forecasting.

''(f) PRIORITIZATION.—In acquiring data and services from private sector entities, the Under Secretary shall prioritize obtaining surface-based, airborne-based, space-based, and coastal- and ocean-based data, metadata, and services for operational use from entities that participate in the Commercial Data Pilot Program under section 303 or other programs of the National Oceanic and Atmospheric Administration that acquire commercial data or observations.

''(g) NOAA OBSERVING SYSTEMS AND FLEET COUNCILS.—

''(1) IN GENERAL.—The Under Secretary shall maintain the Observing Systems Council, or successor program, and the Fleet Council of the National Oceanic and Atmospheric Administration (in this subsection collectively referred to as the 'Councils') to provide strategic recommendations and guidance regarding the prioritization, design, development, acquisition, upgrading, lifecycle, performance monitoring, and retiring of major components of observing systems and portfolios, including related to the acquisition of commercial weather and environmental data and services.

''(2) LINE OFFICE COORDINATION.—The Councils shall ensure coordination and adherence to uni-

form policies by providing guidance to all line offices of the National Oceanic and Atmospheric Administration engaged in observing systems portfolio design, technology, development, execution, and operation.

''(h) DATA AND HOSTED PAYLOADS.—Notwithstanding any other provision of law, the Secretary of Commerce may enter into agreements relating to the following:

''(1) The purchase of weather and environmental data and services through contracts with private sector data and service providers.

''(2) The placement of weather instruments on co-hosted Federal, international, or private space, airborne, maritime, or ground platforms.

''(i) OMBUDSMAN.—The Under Secretary shall establish or designate at least one Ombudsman position within the Commercial Data Program to implement the recommendations of the Observing Systems Council under subsection (g) related to commercial weather and environmental data and services acquisitions. Such an Ombudsman shall act as the liaison between private sector data and service providers and the National Oceanic and Atmospheric Administration with respect to receiving recommendations and resolving issues related to engagement, testing, contracting, or other areas related to the Adminis-

tration's efforts to acquire commercial weather and environmental data and services.

''(j) REPORT.—Not later than 2 years after the date of enactment of the Weather Research and Forecasting Innovation Reauthorization Act of 2026, the Under Secretary shall submit to the Committee on Science, Space, and Technology and the Committee on Natural Resources of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report evaluating the activities and needed authorities related to data governance and management practices, including acquisition, collection, documentation, quality control, validation, reprocessing, storage, retrieval, dissemination, and long-term preservation activities across all National Oceanic and Atmospheric Administration line, staff, and corporate offices.

''(k) BRIEFING AND REPORT.—If the Under Secretary determines that the data described in subsection (b) cannot be made accessible for free, unrestricted, and open redistribution under licensing agreements, the Under Secretary shall—

''(1) provide a briefing to the Committee on Science, Space, and Technology of the House of Representatives, the Committee on Natural Resources of the House of Representatives, the Com-

mittee on Commerce, Science, and Transportation of the Senate, the Committee on Appropriations of the House of Representatives, and the Committee on Appropriations of the Senate, not later than 45 days after each such determination, that includes—

''(A) a description of the data covered by the determination;

''(B) the justification for such determination, including any impacts on operational performance, mission requirements, cost effectiveness, cybersecurity, latency, continuity of operations, or data quality requirements; and

''(C) a description of any limitations on access, use, or redistribution of such data, and, if practicable, estimated costs to remove those limitations; and

''(2) submit an annual report to the Committee on Science, Space, and Technology of the House of Representatives, the Committee on Natural Resources of the House of Representatives, the Committee on Commerce, Science, and Transportation of the Senate, the Committee on Appropriations of the House of Representatives, and the Committee on Appropriations of the Senate that includes—

''(A) a comprehensive analysis of the cumulative information provided from all briefings under paragraph (1); and

''(B) an assessment of the availability of alternative data sources and whether such data sources would degrade operational capability or mission performance.''.

SEC. 302. COMMERCIAL DATA PILOT PROGRAM.

Section 303 of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8533) is amended to read as follows:

''SEC. 303. COMMERCIAL DATA PILOT PROGRAM.

''(a) PROGRAM ESTABLISHMENT.—Within the Commercial Data Program under section 302, there shall be, to the maximum extent practicable, a pilot program, to be known as the 'Commercial Data Pilot Program', to engage with external partners and providers to test and develop shared standards and methodologies for quality, use, licensing, and attribution of observation services and data, and to ensure quality, impact, and compatibility of such services and data with National Oceanic and Atmospheric Administration modeling capabilities, meteorological situational awareness, and forecasting.

''(b) AUTHORIZATION FOR TEST AND EVALUATION.—The Commercial Data Pilot Program is authorized

to test and evaluate all sources and types of observation services, imagery, products, and data from private sector entities, including new and innovative surface-based, airborne-based, space-based, and coastal- and ocean-based data, metadata, and model components.

''(c) CRITERIA.—The Under Secretary shall ensure that data acquired through the Commercial Data Pilot Program meet the most recent standards and specifications, as published pursuant to section 302(e), required for observation services and data.

''(d) PILOT CONTRACTS.—The Under Secretary shall, through an open competition, regularly enter into pilot contracts with private sector entities capable of providing observation services and data referred to in subsection (a) that meet the standards and specifications published pursuant to section 302(e) for providing such services and data in a manner that allows the Under Secretary to calibrate and evaluate such services and data for use in National Oceanic and Atmospheric Administration activities.

''(e) ASSESSMENT OF VIABILITY.—The Under Secretary shall annually assess and 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 summary of the pilot

contracts entered into pursuant to subsection (d), an assessment of the extent to which such contracts meet the standards and specifications published pursuant to section 302(e), and any additional information determined necessary related to the following:

''(1) The viability of assimilating observation data and integrating services from private sector entities into National Oceanic and Atmospheric Administration forecasts and models.

''(2) The expected value added or improvements from such services and data if assimilated into models and integrated into National Oceanic and Atmospheric Administration forecasts and models.

''(3) The accuracy, quality, timeliness, validity, reliability, usability, information technology security, and cost-effectiveness of obtaining observation services and data from private sector entities.

''(4) If the Under Secretary determines it is viable to assimilate observation data and integrate such services into the forecasts and models of the National Oceanic and Atmospheric Administration, not later than 1 year after the date of the determination, the steps to integrate such services and data into operational use by the National Oceanic

and Atmospheric Administration and any associated challenges in doing so.

''(f) OBTAINING FUTURE DATA.—If an assessment under subsection (e) demonstrates the ability of services and data from private sector entities to meet the standards and specifications published pursuant to section 302(e), the Under Secretary shall—

''(1) when cost effective and feasible, obtain observation services and data from private sector entities through the Commercial Data Program under section 302, provided such services and data are consistent with mission requirements and continuity of operations;

''(2) as early as possible in the acquisition process for any future National Oceanic and Atmospheric Administration satellite system, determine whether there is a suitable cost effective, commercial capability available or that will be available to meet applicable instrument, spacecraft, or system requirements before completion of the critical design phase of such planned satellite system;

''(3) if the Under Secretary determines under paragraph (2) that a suitable cost effective, commercial capability is or will be available, determine whether and how such capability is in the national

interest if developed as a solely governmental system; and

''(4) 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 detailing any determinations made under paragraphs (2) and (3).''.

SEC. 303. CONTRACTING AUTHORITY AND AVOIDANCE OF DUPLICATION.

Title III of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8531 et seq.) is amended by adding at the end the following:

''SEC. 304. CONTRACTING AUTHORITY AND AVOIDANCE OF DUPLICATION.

''(a) IN GENERAL.—Consistent with the authorities of other Federal departments and agencies that contract and partner with private sector entities, including under section 3903 of title 41, United States Code, the Under Secretary is authorized to use contracting mechanisms and enter into agreements that use multiyear contract options. In carrying out sections 302 and 303, the Under Secretary shall, to the greatest extent possible—

''(1) enter into year-long or multiyear contracts using contracting mechanisms that foster resiliency of service and data purchased;

''(2) partner and contract with multiple observation service and data providers simultaneously to reduce risks of data gaps and improve mission robustness; and

''(3) use authorities, such as additional forms of transaction agreements under section 301(d), that allow for innovative partnerships with private sector entities.

''(b) SAVINGS CLAUSE.—Nothing in this title may be construed as infringing on the acquisition authority or strategy of Federal entities authorized under title 10, United States Code.

''(c) UNNECESSARY DUPLICATION.—In meeting the requirements under this title, the Under Secretary shall avoid unnecessary duplication between the National Oceanic and Atmospheric Administration, the National Aeronautics and Space Administration, other Federal departments and agencies, and private sector entities, including relating to corresponding expenditures of funds and employment of personnel by—

''(1) coordinating existing activities with other civilian Federal departments and agencies that pro-

vide, contract, or partner with private sector entities to acquire weather and environmental observations and data; and

''(2) coordinating and soliciting weather and environmental observations and data requirements and needs from other civilian Federal departments and agencies to be acquired by the Commercial Data Program under section 302.

''(d) FAIR COMPENSATION FOR INTERAGENCY NEEDS.—The Under Secretary, to the maximum extent practicable, shall ensure that Federal departments and agencies utilizing services and data under sections 302 and 303 fairly compensate the National Oceanic and Atmospheric Administration, or the non-Federal entities providing such services or data, as appropriate, for use.''.

SEC. 304. DATA ASSIMILATION, MANAGEMENT, AND SHARING PRACTICES.

Title III of the Weather Research and Forecasting Innovation Act of 2017, as amended by section 303 of this Act, is further amended by adding at the end the following:

''SEC. 305. DATA ASSIMILATION, MANAGEMENT, AND SHARING PRACTICES.

''(a) DATA STANDARDS.—The Under Secretary, in collaboration with the weather enterprise, shall seek to es-

tablish consistent and open data and metadata standards to support open science, including simple cloud-optimized data formats and application programming interfaces that support findability, accessibility, usability, and preservability.

''(b) DATA INFRASTRUCTURE.—

''(1) IN GENERAL.—The Under Secretary, in consultation with the Chief Information Officer and appropriate program heads, shall consolidate and arrange data infrastructure needs to ensure efficient and effective data transfer between National Oceanic and Atmospheric Administration offices by considering the use of commercial cloud technologies, or similar hybrid structures, to host and transmit data and metadata.

''(2) FEDERAL PARTNERSHIPS.—In carrying out paragraph (1), the Under Secretary may partner with the heads of other Federal departments and agencies, including the National Aeronautics and Space Administration, the Department of Energy, the United States Space Force, the United States Coast Guard, the United States Navy, the Federal Aviation Administration, the United States Forest Service, the Environmental Protection Agency, the National Science Foundation, and the United States

Geological Survey, to co-locate data with joint utility and support a transition to cloud architectures, including commercial cloud networks.

''(3) LONG-TERM DATA ARCHIVE.—The Under Secretary shall ensure the long-term management, maintenance, and stewardship of archival data and metadata acquired through the Commercial Data Program under section 302 is conducted within the National Centers for Environmental Information.

''(c) DATA SHARING WITH THE WEATHER ENTERPRISE.—

''(1) IN GENERAL.—To the greatest extent practicable, the Under Secretary shall—

''(A) continue to ensure the delivery of data through sound and robust infrastructure, such as data sharing capabilities of the industry proving grounds that collaboratively develop and test tailored products and services for the private sector; and

''(B) make accessible to members of the weather enterprise data that is—

''(i) not subject to redistribution contract permissions; or

''(ii) purchased through the Commercial Data Program under section 302 or

shared through international government partners.

''(2) DATA ASSIMILATED INTO MODELS OR FORECASTS.—If data described in paragraph (1)(B) are required to be assimilated into numerical weather prediction models or automated forecast guidance to satisfy terms of a redistribution contract, the Under Secretary shall make accessible without delay the numerical weather prediction model or automated forecast guidance output, as the case may be.

''(d) DATA ASSIMILATION.—

''(1) IN GENERAL.—The Under Secretary, in coordination with the Commercial Data Program under section 302, the National Centers for Environmental Prediction, the National Centers for Environmental Information, the Office of Oceanic and Atmospheric Research, and any other relevant offices within the National Oceanic and Atmospheric Administration, shall establish a program to test, advance, and implement data assimilation methods, which may include artificial intelligence, machine learning, data pre- and post-processing, efficient input and output, and next-generation algorithms.

''(2) DATA ASSIMILATION UNIVERSITY CONSORTIUM.—

"(A) IN GENERAL.—Through the program established pursuant to paragraph (1), the Under Secretary shall establish a consortium consisting of institutions of higher education (as defined in section 101 of the Higher Education Act of 1965 (20 U.S.C. 1001)) to address critical research challenges for data assimilation and foster a growing data assimilation workforce.

"(B) FUNCTIONS.—The consortium established under subparagraph (A) shall seek—

"(i) to solve critical research issues relating to data assimilation through innovative research;

"(ii) to increase significantly the number of students, including graduate-level students, in data assimilation;

"(iii) to use modern software and frameworks, such as the Joint Effort for Data Assimilation Integration, or emerging technologies, such as artificial intelligence and machine learning techniques, to conduct data assimilation research and development and facilitate research-to-oper-

ations efforts to improve weather modeling and prediction;

''(iv) to identify and prioritize critical research areas in data assimilation and facilitate operations-to-research efforts;

''(v) to establish and enable an effective collaboration infrastructure between National Oceanic and Atmospheric Administration facilities, such as laboratories, centers, or joint agency institutes, and the research community, including a mechanism for external partners to host Administration employees; and

''(vi) to establish mechanisms to enable all members of the consortium to archive and access data required to support the work under this subsection.

''(3) COORDINATION.—In carrying out this subsection, the Under Secretary shall ensure the National Oceanic and Atmospheric Administration and its associated activities focus on research-to-operations and operations-to-research efforts, including by coordinating and collaborating with the Joint Center for Satellite Data Assimilation.

''(4) DATA ASSIMILATION, MANAGEMENT, AND SHARING PRACTICES SECURITY.—The activities authorized under this subsection shall be conducted in a manner consistent with subtitle D of title VI of the Research and Development, Competition, and Innovation Act (division B of Public Law 117–167; 42 U.S.C. 19231 et seq.).

''(e) STUDY ON DATA MANAGEMENT.—

''(1) IN GENERAL.—Subject to the availability of appropriations, the Under Secretary shall, not later than 90 days after the date of enactment of this section, seek to enter into an agreement with a non-Federal entity to conduct a study on matters concerning data practices and management needs at the National Oceanic and Atmospheric Administration.

''(2) ELEMENTS.—In conducting the study under paragraph (1), the outside entity shall—

''(A) assess the costs and benefits of current data management needs for observational and operational mission requirements;

''(B) develop recommendations regarding how to make the data portfolio of the National Oceanic and Atmospheric Administration more robust and cost effective;

"(C) identify data infrastructure technologies and needs that are essential to the performance of modeling systems of the Administration;

"(D) assess the sharing needs and practices of the Administration for both internal and external dissemination;

"(E) develop recommendations for methods of data infrastructure sharing, including data purchased from the commercial sector; and

"(F) develop recommendations for data standards, formats, and protocols to support artificial intelligence and machine learning techniques.

"(3) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated $1,000,000 to carry out the study under paragraph (1) to remain available until expended.".

SEC. 305. CLERICAL AMENDMENT.

The table of contents in section 1(b) of the Weather Research and Forecasting Innovation Act of 2017 is amended by striking the items relating to sections 302 and 303 and inserting the following:

"Sec. 302. Commercial Data Program.
"Sec. 303. Commercial Data Pilot Program.
"Sec. 304. Contracting authority and avoidance of duplication.
"Sec. 305. Data assimilation, management, and sharing practices.".

TITLE IV—COMMUNICATING WEATHER TO THE PUBLIC

SEC. 401. DEFINITIONS.

In this title:

(1) HAZARDOUS WEATHER OR WATER EVENTS.—The term ''hazardous weather or water events'' means weather or water events that have a high risk of loss of life or property, including the following:

(A) Severe storms, such as hurricanes and short-fused, small-scale hazardous weather or hydrologic events produced by thunderstorms, including large hail, damaging winds, tornadoes, and flash floods.

(B) Winter storms, such as freezing or frozen precipitation (including freezing rain, sleet, and snow), or combined effects of freezing or frozen precipitation and strong winds.

(C) Other weather hazards, such as extreme heat or cold, wildfire, drought, dense fog, high winds, and river, coastal, or lakeshore flooding.

(2) INSTITUTION OF HIGHER EDUCATION.—The term ''institution of higher education'' has the

meaning given that term in section 101 of the Higher Education Act of 1965 (20 U.S.C. 1001).

(3) PUBLIC CLOUD.—The term ''public cloud'' means an information technology model in which service providers make computing services, including compute and storage and develop-and-deploy environments and applications, available on-demand to organizations and individuals over the public internet or other means that allows for the widest dissemination of information.

(4) WATCH; WARNING.—

(A) IN GENERAL.—The terms ''watch'' and ''warning'', with respect to a hazardous weather or water event, mean products issued by the National Oceanic and Atmospheric Administration, intended for consumption by the general public, to alert the general public to the potential for or presence of such event and to inform action to prevent loss of life or property.

(B) EXCEPTION.—The terms ''watch'' and ''warning'' do not include technical or specialized meteorological or hydrological forecasts, outlooks, or model guidance products.

SEC. 402. HAZARDOUS WEATHER OR WATER EVENT RISK COMMUNICATION.

(a) IN GENERAL.—The Under Secretary shall maintain and improve the system of the National Oceanic and Atmospheric Administration by which the risks of hazardous weather or water events are communicated to the general public, with the goal of informing action and encouraging response to prevent loss of life and property.

(b) HAZARD RISK COMMUNICATION IMPROVEMENT AND SIMPLIFICATION.—

(1) IN GENERAL.—The Under Secretary shall maintain a hazard risk communication program (in this subsection referred to as the ''program''), for the purposes of simplifying and improving the communication of hazardous weather or water event risks.

(2) TERMINOLOGY.—The program, in coordination with social, behavioral, risk communication, and economic science community and user feedback, shall identify, eliminate, or modify unnecessary, redundant, or confusing terms for hazardous weather or water event communications and add new terminology, as appropriate.

(3) COMMUNICATIONS IMPROVEMENT.—The program shall improve the form, content, and methods of communications of hazardous weather or

water events to more clearly inform action and increase the likelihood that the public takes such action to prevent the loss of life or property.

(4) EVALUATIONS.—The program shall, in coordination with the performance branch of the National Weather Service, develop metrics for that branch to track and evaluate the degree to which communications of hazardous weather or water events inform action and encourage response.

(5) SUPPORT PLAN.—The program shall develop a plan for the purpose of supporting the activities described in paragraph (3). The plan shall be periodically updated and informed by internal and extramural research and the results of the evaluation of communications of hazardous weather or water events conducted under paragraph (4).

(6) RECOMMENDATIONS.—In carrying out this subsection, the program shall develop and implement recommendations that—

(A) are based on the best and most recent understanding from social, behavioral, risk, and communication science research;

(B) are validated by social, behavioral, risk, and communication science, taking into account the importance of methods that support

reproduction and replication of scientific studies, use of rigorous statistical analyses, and, as applicable, data analysis supported by artificial intelligence and machine learning technologies;

(C) account for the needs of various demographics and geographic regions;

(D) account for the differences between various types of weather and water hazards;

(E) respond to the needs of Federal, State, and local government partners and media partners;

(F) account for necessary changes in the infrastructure, technology, and protocols for creating and disseminating Federally operated watches and warnings;

(G) account for artificial intelligence capabilities, including models specifically trained on weather terminology, that enable efficient and accurate communication to the public; and

(H) account for the need for enhanced or earlier communication of a hazardous weather event to inform action and encourage response when the event impacts a geographic area where the event is historically abnormal.

(7) COORDINATION.—The program shall coordinate with—

(A) Federal partners, including National Laboratories, cooperative institutes, and regional integrated sciences and assessments programs;

(B) State and local government partners;

(C) Indian tribes;

(D) institutions of higher education; and

(E) media partners.

(8) TIMELINESS AND CONSISTENCY.—The program shall develop best practices and guidance for ensuring timely and consistent communication across public-facing platforms that disseminate hazardous weather or water event information.

(c) WEATHER COORDINATION METEOROLOGIST.—Section 405 of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8545) is amended—

(1) in subsection (a)(1), by inserting ''and one warning coordination meteorologist at the National Centers for Environmental Information'' after ''weather forecast office of the National Weather Service'';

(2) in subsection (c)(1), by striking ", consistent with the analysis described in section 409,"; and

(3) in subsection (c)(1)(A)—

(A) by inserting "or, if not employed at a weather forecast office, to the area or functions assigned by the Director," after "employed"; and

(B) by striking "National Weather Service" and inserting "National Oceanic and Atmospheric Administration".

SEC. 403. HAZARD COMMUNICATION RESEARCH AND ENGAGEMENT.

(a) IN GENERAL.—The Under Secretary may maintain, as appropriate, a program to—

(1) modernize the development and communication of risk-based, statistically reliable, probabilistic hazard information, with the goal of informing appropriate responses to hazardous weather or water events; and

(2) improve the fundamental social, behavioral, and economic science relating to communications, including by means of collecting voluntary data, regarding hazardous weather or water events.

(b) COORDINATION.—In carrying out the program under subsection (a), the Under Secretary shall coordinate and communicate with—

(1) States, Tribal governments, localities, and emergency managers regarding research priorities and results; and

(2) the private sector, as appropriate.

(c) PILOT PROGRAM FOR TORNADO HAZARD COMMUNICATIONS.—

(1) IN GENERAL.—The Under Secretary, in coordination with the VORTEX–USA program under section 103 of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8513), as amended by section 103 of this Act, and in collaboration with 1 or more eligible institutions (or consortia thereof), shall establish a pilot program for tornado hazard communications to test incorporation of research into operations with respect to tornadoes.

(2) MERIT-BASED PROCESS.—Amounts under the pilot program under paragraph (1) shall be awarded to eligible institutions through a merit-based competitive process.

(3) ELIGIBLE INSTITUTION DEFINED.—In this subsection, the term ''eligible institution'' means any of the following:

(A) An institution that is frequently subjected to severe weather, such as tornadoes, hurricanes, and floods.

(B) An institution of higher education in close proximity to a Weather Forecast Office of the National Weather Service.

(d) STUDY FOR HURRICANE HAZARD COMMUNICATION.—

(1) IN GENERAL.—The Under Secretary, in coordination with the hurricane forecast improvement program under section 104 of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8514), as amended by section 104 of this Act, and in collaboration with 1 or more eligible institutions (or consortia thereof), shall enter into an agreement with an appropriate entity, as determined by the Under Secretary, to conduct a study using a mixed methods approach, including surveys, focus groups, and interviews, to gather information from hurricane-prone population areas regarding the levels of preparedness of such areas for hurricanes or in re-

sponse to early forecasts and warnings of the National Oceanic and Atmospheric Administration.

(2) ELEMENTS.—The pilot study required under paragraph (1) shall evaluate the following:

(A) Possession of disaster supplies.

(B) Evacuation decisions.

(C) Levels of trust of tropical cyclone information and hurricane path prediction from various sources.

(D) Access to tropical cyclone and hurricane forecasts and warnings in the first language of each individual interviewed as part of the pilot study.

(E) Any reasoning or deliberation by the individuals interviewed as part of the pilot study that may hinder the ability or willingness of the individuals to evacuate.

(3) ADDITIONAL CRITERIA.—The Under Secretary shall publish the methodology of the study described in paragraph (1) on a publicly accessible website of the National Oceanic and Atmospheric Administration.

(4) ELIGIBLE INSTITUTION DEFINED.—In this subsection, the term ''eligible institution'' means any of the following:

(A) An institution of higher education, nonprofit organization, or other institution located in a jurisdiction eligible to participate in the program under section 113 of the National Science Foundation Authorization Act of 1988 (42 U.S.C. 1862g).

(B) An institution of higher education, nonprofit organization, or other institution located in proximity to a Weather Forecast Office of the National Weather Service.

(e) HURRICANE SOCIAL, BEHAVIORAL, AND ECONOMIC SCIENCES.—

(1) IN GENERAL.—The Under Secretary shall carry out research and development activities to improve how the public receives, interprets, responds to, and values hurricane forecasts and warnings.

(2) ELEMENTS.—In conducting activities under paragraph (1), the Under Secretary shall—

(A) consider the results from the study carried out under subsection (d);

(B) conduct a comprehensive review of the manner by which the public receives, interprets, responds to, and makes decisions regarding hurricane forecasts and warnings, including—

(i) how weather observations, downstream models, and processes affect the decision tools or products derived from hurricane forecasts and warnings;

(ii) how hurricane forecasts and warnings generated by decision tools and products are used by emergency managers, governments, and other users to benefit the public and stakeholder groups;

(iii) how past experiences with hurricanes impact the decision making of the general public;

(iv) how the source of such hurricane forecasts and warnings affects interpretation;

(v) how tropical cyclone forecasts and warnings are received and interpreted by the general public;

(vi) how understanding of and response to hurricane forecasts and warnings varies across demographic groups, including the elderly and people with disabilities;

(vii) the effect of language barriers on the accessibility of hurricane forecasts and warnings; and

(viii) how understanding of and response to such hurricane forecasts and warnings varies across geographic areas, including rural, urban, and suburban areas;

(C) identify communication data gaps based on the review conducted pursuant to subparagraph (B);

(D) carry out research, including data collection and baseline assessments, in coordination with the hurricane forecast improvement program under section 104 of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8514), as amended by section 104 of this Act, to evaluate and quantify the economic value of extending lead times of tropical cyclone and hurricane forecasts and watches and warnings;

(E) use the post-storm surveys, in addition to studies and assessments conducted under section 406 of this Act, to conduct retrospective or ex ante assessments of previous hurricane forecasts and warnings to better understand the key components of such forecasts and watches

and warnings that affected actions or initiated behavior changes;

(F) conduct cost-benefit analyses of forecasts and watches and warnings improvement alternatives developed through the hurricane forecast improvement program under section 104 of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8514), as amended by section 104 of this Act; and

(G) identify and conduct assessments of the risk to the elderly for pre-, during, and post-storm periods in regions and communities with significant elderly populations, including retirement communities.

SEC. 404. NOAA WEATHER RADIO.

(a) IN GENERAL.—The Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8501 et seq.) is amended by adding at the end the following:

"TITLE VII—NOAA WEATHER RADIO

"SEC. 701. NOAA WEATHER RADIO.

''(a) IN GENERAL.—The Under Secretary shall establish or maintain a nationwide weather radio network, to be known as 'NOAA Weather Radio', that—

''(1) broadcasts weather information, including emergency weather watches, warnings, information regarding geological hazards, and other hazard information;

''(2) operates 24 hours a day, 7 days a week; and

''(3) is resilient to emergency hazards, such as loss of power and cellular service.

''(b) COVERAGE AND RELIABILITY.—The Under Secretary shall ensure the reliability of NOAA Weather Radio by—

''(1) maintaining support for existing systems before any new technology is implemented, especially those serving areas not covered by or having poor quality cellular service; and

''(2) ensuring consistent maintenance and operations monitoring, with timely repairs to broadcast transmitter site equipment and antennas, including transmitter site equipment and antennas located in remote areas subject to an elevated risk of severe weather events.

''(c) MODERNIZATION INITIATIVE.—

''(1) IN GENERAL.—To the maximum extent practicable, the Under Secretary shall expand the coverage of and modernize NOAA Weather Radio to

ensure it remains valuable to the public, including by—

"(A) improving those methods of communicating the risks posed by hazardous weather or water events to the public that are most likely to result in informed decision making regarding the mitigation of such risks;

"(B) improving communication of hazardous weather warnings and the urgency of such warnings to areas that experience a high frequency of such warnings;

"(C) enhancing the ability to amplify non-weather emergency messages for the integrated public alert and warning system, or successor system, under section 1756 of the Homeland Security Act of 2002 (6 U.S.C. 321o–1) through NOAA Weather Radio, as necessary;

"(D) acquiring additional transmitters as determined appropriate to expand coverage to—

"(i) areas at high risk for rapid onset weather disasters that require short-fuse warnings;

"(ii) communities without—

"(I) mobile broadband internet access service (as defined in section

8.1(b) of title 47, Code of Federal Regulations (or a successor regulation)) and as depicted by a map created under section 802(c)(1)(C) of the Communications Act of 1934 (47 U.S.C. 642(c)(1)(C));

''(II) State or local emergency warning systems; or

''(III) satellite service; and

''(iii) Federal lands, such as land in the National Park System or the National Forest System and National Recreation Areas;

''(E) adding the capability to disseminate NOAA Weather Radio alerts—

''(i) by satellite; or

''(ii) through the cloud or by means of any other emerging technology that satisfies the requirements of this section; and

''(F) conducting research and development to modernize geographically specific warnings, including expanding NOAA Weather Radio capabilities for geographic specificity, such as partial county alerting.

''(2) ELEMENTS.—In carrying out paragraph (1), the Under Secretary shall—

''(A) upgrade telecommunications infrastructure of NOAA Weather Radio to accelerate the transition of broadcasts to internet protocol-based communications over non-copper media;

''(B) accelerate software upgrades to the Advanced Weather Interactive Processing System, or any relevant system successors, in order to implement partial county notifications and alerts;

''(C) enhance accessibility and usability of data and feeds of NOAA Weather Radio with feedback from relevant stakeholders, including the private sector;

''(D) develop options, including satellite backup capability and commercial provider partnerships, for continuity of service of NOAA Weather Radio in the event of an outage at a weather forecast office;

''(E) research and develop alternative options to transmit NOAA Weather Radio signals to transmitters that are remote or do not have internet protocol capability;

"(F) transition critical applications to the Integrated Dissemination Program, or any relevant program successors;

"(G) prohibit the purchase of equipment for upgrades for NOAA Weather Radio from companies or entities based in a foreign country of concern (as such term is defined in section 10638 of the Research and Development, Competition, and Innovation Act (42 U.S.C. 19237));

"(H) work with the General Services Administration, and other relevant agencies, to develop new, alternative, or updated expedited mechanisms to secure priority space capacity, such as leased land and tower space, for NOAA Weather Radio critical infrastructure, including transmitters and antennas that are best suited for the national security and public safety missions of NOAA Weather Radio; and

"(I) establish minimum continuity-of-service standards for NOAA Weather Radio transmitters serving areas subject to an elevated risk of severe weather events.

"(3) PRIORITY.—In carrying out paragraph (1), the Under Secretary shall prioritize practices, capa-

bilities, and technologies recommended in accordance with the assessment under subsection (d) to maximize the accessibility of NOAA Weather Radio, particularly in areas of the United States described in paragraph (1)(D)(i).

''(d) ASSESSMENT FOR MANAGEMENT AND DISTRIBUTION.—

''(1) IN GENERAL.—Not later than 1 year after the date of the enactment of this section, the Under Secretary shall complete an assessment of access to NOAA Weather Radio.

''(2) ELEMENTS.—In conducting the assessment required under paragraph (1), the Under Secretary shall take into consideration and provide to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate recommendations regarding the following:

''(A) Input from relevant stakeholders within the weather enterprise including third-party platforms that provide online services, such as websites and mobile device applications.

''(B) The manner by which existing or new Administration management systems may pro-

mote consistent, efficient, and compatible access to NOAA Weather Radio.

''(C) The ability of the National Oceanic and Atmospheric Administration to aggregate real-time broadcast feeds at one or more central locations, as a redundancy to the broadcast feed from the nearest weather forecast office.

''(D) Effective coordination between agencies with responsibilities relating to emergencies and natural disasters.

''(E) The potential effects of an electromagnetic pulse or geomagnetic disturbance on NOAA Weather Radio.

''(e) SHORT-FUSE WARNING DEFINED.—In this section the term 'short-fuse warning' means a warning issued for a local weather hazard of relatively short duration, such as a tornado, severe thunderstorm, or flash flood.

''(f) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Under Secretary—

''(1) for each of fiscal years 2027 through 2031, $25,000,000 to operate NOAA Weather Radio under subsections (a) and (b); and

"(2) for fiscal year 2027, $100,000,000, which shall remain available until expended, to carry out subsections (c) and (d).".

(b) WEATHER READY ALL HAZARDS AWARD PROGRAM.—Section 407 of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8546) is—

(1) transferred to title VII of that Act, as added by subsection (a);

(2) inserted after section 701 of that Act, as added by subsection (a); and

(3) redesignated as section 702.

(c) CLERICAL AMENDMENTS.—The table of contents for the Weather Research and Forecasting Innovation Act of 2017 is amended—

(1) by striking the item relating to section 407; and

(2) by adding at the end the following:

"TITLE VII—NOAA WEATHER RADIO

"Sec. 701. NOAA Weather Radio.
"Sec. 702. National Oceanic and Atmospheric Administration Weather Ready All Hazards Award Program.".

SEC. 405. NATIONAL STANDARDS FOR WEATHER WARNING SYSTEMS IN FLASH FLOOD ZONES.

(a) IN GENERAL.—Subject to the availability of appropriations, the Under Secretary of Commerce for Standards and Technology, in consultation with the Under Secretary of Commerce for Oceans and Atmosphere, shall

support the development of standards for flash flood emergency alert systems within the 100-year floodplain (as defined in section 100202(a) of the Biggert-Waters Flood Insurance Reform Act of 2012 (42 U.S.C. 4004(a))).

(b) REQUIREMENTS.—If the Under Secretary of Commerce for Standards and Technology supports the development of standards under subsection (a), the Under Secretary of Commerce for Standards and Technology shall ensure that such standards—

(1) meet the needs of communities without—

(A) mobile broadband internet access service (as defined in section 8.1(b) of title 47, Code of Federal Regulations (or a successor regulation)) and as depicted by a map created under section 802(c)(1)(C) of the Communications Act of 1934 (47 U.S.C. 642(c)(1)(C));

(B) State or local emergency warning systems; or

(C) satellite service; and

(2) will result in reliable flash flood emergency alert systems, with respect to a 100-year floodplain referred to in subsection (a), especially during hazardous events.

(c) REPORT REQUIRED.—If the Under Secretary of Commerce for Standards and Technology supports the de-

velopment of standards and appropriations are sufficient to carry out subsection (a), the Under Secretary of Commerce for Standards and Technology shall, not later than 2 years after the date of enactment of this Act, 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 that includes a summary of such standards developed under subsection (a).

SEC. 406. POST-STORM SURVEYS AND ASSESSMENTS.

(a) IN GENERAL.—The Under Secretary shall perform 1 or more post-storm surveys and assessments following every hazardous weather or water event determined by the Under Secretary to be of sufficient societal importance to warrant a post-event survey and assessment.

(b) COORDINATION.—The Under Secretary shall coordinate with Federal, State, and local governments, private entities, and relevant institutions of higher education (or a consortium thereof) when conducting post-storm surveys and assessments under this section to optimize data collection, sharing, integration, archiving, and access, as appropriate for research needs.

(c) DATA AVAILABILITY.—The Under Secretary shall make the appropriate data obtained from each post-storm survey or assessment conducted under this section avail-

able to the public as soon as practicable after conducting each such survey or assessment.

(d) IMPROVEMENT.—In carrying out this section, the Under Secretary shall—

(1) examine the role of uncrewed aerial and marine systems in data collection during post-storm surveys and assessments conducted under this section;

(2) identify gaps in tactics and procedures and update such tactics and procedures to enhance the efficiency and reliability of data obtained from post-storm surveys and assessments;

(3) to the maximum extent practicable, increase the number of post-storm community impact studies, particularly among under-observed populations or populations that experience disproportionate impacts from hazardous weather that threatens life and property, including—

(A) surveying individual responses;

(B) conducting review of the accuracy of prior risk evaluations;

(C) evaluating the efficacy of prior mitigation activity; and

(D) gathering survivability statistics; and

(4) as appropriate, integrate social, behavioral, and economic sciences elements into existing post-storm surveys and assessments, including elements related to the efficacy of forecast and warning information that was shared with the public, barriers that affected the ability of the public to take action, and any challenges with respect to messaging about the hazardous weather or water event.

(e) SUPPORT FOR EMPLOYEES.—The Under Secretary shall provide access to training, resources, and professional counseling to support the mental health of employees conducting post-storm surveys and assessments under this section.

(f) EXEMPTION.—Subchapter I of chapter 35 of title 44, United States Code, shall not apply to the collection of information during a post-storm survey or assessment conducted under this section.

SEC. 407. GOVERNMENT ACCOUNTABILITY OFFICE REPORT ON ALERT DISSEMINATION FOR HAZARDOUS WEATHER OR WATER EVENTS.

(a) IN GENERAL.—Not later than 18 months after the date of the enactment of this Act, the Comptroller General of the United States 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 that examines the information technology infrastructure of the National Weather Service, specifically regarding the system for timely public notification via alerts and updates regarding hazardous weather or water events.

(b) ELEMENTS.—The report required by subsection (a) shall include the following:

(1) An analysis of the information technology infrastructure of the National Weather Service, including software and hardware capabilities and limitations, including an examination of server and data storage methods, broadband, data management, and data sharing.

(2) An identification of secondary and tertiary fail-safes for the timely distribution to the public of notifications via alerts and updates regarding hazardous weather or water events.

(3) A determination of the extent to which public notifications via alerts and updates regarding hazardous weather or water events have been delayed and an identification of possible improvements or corrective measures to address delays in the notification process.

(4) An assessment of whether collaboration with other Federal departments and agencies, States, or

private entities could reduce delays in notifications to the public.

(5) A description of actions being undertaken to better identify critical steps in public notification via alerts and updates for hazardous weather or water events that may be vulnerable to disruption or failure in the event of communication, technological, or computational failure.

(6) The geographical differences in availability and effectiveness of rural systems, including an estimated number of rural areas affected by unreliable or unavailable systems and barriers to obtain or upgrade such systems.

SEC. 408. DATA COLLECTION, MANAGEMENT, AND PROTECTION.

(a) DATA COLLECTION.—The Under Secretary may collect social, behavioral, and economic data, including data relating to Federal communication of hazardous weather or water events and the public response to such communications. Where appropriate, the Under Secretary shall encourage the collection of secondary data, purchase data, or partner with the private sector to obtain data.

(b) DATA MANAGEMENT.—The Under Secretary shall establish and maintain a central repository system for the National Oceanic and Atmospheric Administration

for data related to the communication of and related public response to hazardous weather or water events, including data developed or received pursuant to this title.

(c) PROTECTION OF DATA.—The Under Secretary shall ensure that data is collected, managed, and used by the National Oceanic and Atmospheric Administration in accordance with legal, regulatory, and contractual obligations, including chapter 31 of title 44, United States Code, and the Foundations for Evidence-Based Policymaking Act of 2018 (Public Law 115–435).

(d) DIGITAL WATERMARKING.—The Under Secretary shall develop methods to reduce the likelihood of unauthorized tampering with online public notifications of hazardous weather or water events, such as developing digital watermarks.

(e) POLICIES AND PROCEDURES.—The Under Secretary shall establish policies and procedures for the collection, archiving, and managing of data related to community response, including the response of affected populations, to hazardous weather or water events.

TITLE V—IMPROVING WEATHER INFORMATION FOR AGRICULTURE AND WATER MANAGEMENT

SEC. 501. WEATHER INFORMATION FOR AGRICULTURE AND WATER MANAGEMENT.

Section 1762 of the Food Security Act of 1985 (15 U.S.C. 8521) is amended—

(1) by amending subsection (c) to read as follows:

''(c) FUNCTIONS.—The Under Secretary shall—

''(1) conduct and support research to improve understanding of subseasonal to seasonal predictability for temperature, precipitation, and other Earth system variables and applications;

''(2) collect and use data to make usable, reliable, and timely foundational forecasts of subseasonal to seasonal temperature and precipitation;

''(3) support the advancement of multi-model ensemble forecast systems and forecast verification and evaluation capacity, including by—

''(A) developing advanced coupled data assimilation methods using robust Earth system observational data;

''(B) developing improved coupled subseasonal to seasonal ensemble prediction systems;

''(C) improving exchanges and interactions between datasets across different models and Earth system observations to increase model accuracy of local relationships between and drivers of ocean, land, snow, and ice observations; and

''(D) developing data management strategies to support operations and research activities;

''(4) leverage existing research and models from the weather and Earth system enterprises to improve the forecasts under paragraph (2);

''(5) accelerate the operationalization of emerging modeling technologies developed to support and assist the cross development of fully coupled subseasonal to seasonal forecast systems, including during collaborations with other agencies and entities; and

''(6) determine and provide information on how subseasonal to seasonal temperature and precipitation may relate to—

''(A) droughts;

''(B) fires;

''(C) tornadoes;

''(D) hurricanes;

''(E) floods, storm surges, and coastal inundation;

''(F) heat waves and marine heat waves;

''(G) winter storms, snowpack, and permafrost thaw;

''(H) sea ice conditions; and

''(I) other high impact weather or relevant weather disasters.'';

(2) in subsection (d)—

(A) by striking ''paragraph (1)'' and inserting ''paragraph (2)''; and

(B) by striking ''paragraph (3)'' and inserting ''paragraph (6)'';

(3) by amending subsection (h) to read as follows:

''(h) SUBSEASONAL TO SEASONAL FORECASTING PILOT PROJECTS.—

''(1) ESTABLISHMENT.—The Under Secretary shall establish not fewer than 2 pilot projects, in accordance with paragraph (2), within the United States Weather Research Program of the Office of Oceanic and Atmospheric Research of the National Oceanic and Atmospheric Administration to support improved subseasonal to seasonal precipitation fore-

casts for water and agriculture management in the western and central United States.

''(2) OBJECTIVES.—In carrying out this subsection, the Under Secretary shall ensure the following:

''(A) A pilot project under paragraph (1) addresses key science challenges to improving forecasts and developing related products for water management in the western and central United States, including the following:

''(i) Improving operational model resolution, both horizontal and vertical, to resolve issues associated with mountainous terrain, such as intensity of precipitation and relative fraction of rain versus snow precipitation.

''(ii) Improving modeling of interstate or cross-boundary water movement and storage through rivers, tributaries, and aquifers with relation to water availability.

''(iii) Improving fidelity in the operational modeling of the atmospheric boundary layer in mountainous regions.

''(iv) Resolving challenges in predicting winter atmospheric circulation and

storm tracks, including periods of blocked versus unblocked flow over the eastern North Pacific Ocean and western United States.

''(v) Utilizing outcomes from the atmospheric rivers forecast improvement program under section 205 of the Weather Research and Forecasting Innovation Reauthorization Act of 2026 and the precipitation forecast improvement program under section 603 of the Weather Research and Forecasting Innovation Act of 2017 to produce operational tools and services.

''(vi) Improving the quality and temporal and spatial resolution of observations and accurate operational modeling of air-sea interactions, and the influence of oceans on subseasonal to seasonal forecasting.

''(B) A pilot project under paragraph (1) addresses key science challenges to improving forecasts and developing related products for agriculture in the central United States, including the following:

''(i) Improving the quality and temporal and spatial resolution of observations and accurate operational modeling of the land surface and hydrologic cycle, including soil moisture and flash drought processes.

''(ii) Improving fidelity in the operational modeling of warm season precipitation processes.

''(iii) Understanding and predicting large-scale upper-level dynamical flow anomalies that occur in spring and summer.

''(iv) Improving modeling of interstate or cross-boundary water movement and storage through rivers, tributaries, and aquifers with relation to water availability for agriculture.

''(3) ACTIVITIES.—A pilot project under this subsection shall include activities that—

''(A) implement the recommendations of the 2020 Report of the National Weather Service, entitled 'Subseasonal and Seasonal Forecasting Innovation: Plans for the Twenty-First Century', as appropriate;

''(B) achieve measurable objectives for operational forecast improvement; and

''(C) are carried out in coordination with the Assistant Administrator for the Office of Oceanic and Atmospheric Research and the Director of the National Weather Service.

''(4) SUNSET.—The authority under this subsection shall terminate on the date that is 5 years after the date of enactment of the Weather Research and Forecasting Innovation Reauthorization Act of 2026.''; and

(4) by amending subsection (j) to read as follows:

''(j) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated $40,000,000 for each of fiscal years 2027 through 2031 to carry out the activities under this section.''.

SEC. 502. NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM.

(a) IN GENERAL.—Section 3 of the National Integrated Drought Information System Act of 2006 (15 U.S.C. 313d) is amended—

(1) in subsection (a), by striking '', through the National Weather Service and other appropriate

weather and climate programs in the National Oceanic and Atmospheric Administration,'';

(2) in subsection (b)—

(A) in paragraph (1)—

(i) in subparagraph (A), by striking ''and'' after the semicolon;

(ii) in subparagraph (B), by inserting ''and'' after the semicolon; and

(iii) by adding at the end the following:

''(C) incorporates flash drought research and tools to enhance timely response;'';

(B) in paragraph (5), by striking ''improvements in seasonal precipitation and temperature, subseasonal precipitation and temperature, and low flow water prediction; and'' and inserting ''support improvements in subseasonal to seasonal precipitation and temperature, and low flow water prediction;''; and

(C) by striking paragraph (6) and inserting the following:

''(6) continue ongoing research and monitoring activities related to drought, including research activities relating to the prediction, length, severity, and impacts of drought and the role of weather

events and subseasonal to seasonal variability in drought;

''(7) advance and deploy next-generation technologies related to drought, such as monitoring, preparedness, and forecasting capabilities utilizing artificial intelligence, machine learning, and cloud technologies;

''(8) use observational networks, including the National Weather Service cooperative observer program and State or regional hydrological monitoring projects;

''(9) refine drought indicators across multiple spatial and temporal scales;

''(10) improve decision support products;

''(11) optimize data and resources from across the Federal Government;

''(12) investigate and address data gaps, including snowpack monitoring, space-based or in-situ soil moisture monitoring, groundwater data, and data related to rapid intensification events; and

''(13) engage with, and leverage the resources of, entities within the National Oceanic and Atmospheric Administration in existence as of the date of the enactment of the Weather Research and Forecasting Innovation Reauthorization Act of 2026 to

improve coordination of water monitoring, forecasting, and management.'';

(3) in subsection (c)—

(A) in paragraph (2), by striking ''and'' after the semicolon;

(B) in paragraph (3), by striking the period and inserting ''; and''; and

(C) by adding at the end the following:

''(4) in partnership with the National Mesonet Program, establish memoranda of understanding to provide coordinated, high-quality data.''; and

(4) by adding at the end the following:

''(g) MODELING UPDATE.—Not later than 1 year after the date of the enactment of the Weather Research and Forecasting Innovation Reauthorization Act of 2026, the Under Secretary, acting through the National Integrated Drought Information System and the National Weather Service, shall develop a plan to incorporate existing drought products of the National Oceanic and Atmospheric Administration and improved dynamical and statistical forecast modeling tools into probabilistic forecasts.''.

(b) AUTHORIZATION OF APPROPRIATIONS.—Section 4 of the National Integrated Drought Information System Act of 2006 (Public Law 109–430; 15 U.S.C. 313d note) is amended to read as follows:

''SEC. 4. AUTHORIZATION OF APPROPRIATIONS.

''There are authorized to be appropriated to carry out this Act—

''(1) $15,000,000 for fiscal year 2027.

''(2) $15,500,000 for fiscal year 2028.

''(3) $16,000,000 for fiscal year 2029.

''(4) $16,500,000 for fiscal year 2030.

''(5) $17,000,000 for fiscal year 2031.''.

SEC. 503. NATIONAL MESONET PROGRAM.

(a) IN GENERAL.—The Under Secretary shall maintain the National Mesonet Program (in this section referred to as the ''Program''), which shall—

(1) obtain observations to improve understanding of and forecast capabilities for atmospheric, drought, fire, and water events, with a prioritization on leveraging available commercial, academic, and other non-Federal Government environmental data to enhance coordination across the private, public, and academic sectors of the weather enterprise in the United States; and

(2) establish memoranda of understanding with networks outside of the scope of the Program in furtherance of this section.

(b) PROGRAM ELEMENTS.—In carrying out the Program, the Under Secretary shall—

(1) establish means to integrate greater density and more types of environmental observations into the Program on an annual basis, including by encouraging local and regional networks of environmental monitoring stations and in situ sensor networks, including soil moisture and ground-based profilers, to participate in the Program;

(2) improve and increase the quantity and density of environmental observations used by the National Oceanic and Atmospheric Administration (in this section referred to as the ''Administration'') and the National Weather Service to support baseline forecasts, including nowcasts, warnings, and hyperlocal forecasts that protect individuals, businesses, agricultural production, food security, and the military and government agencies in the United States, and enabling such individuals and entities to operate in a safe, efficient, and orderly manner;

(3) yield increased quantities of boundary-layer data to improve numerical weather prediction performance, including in subseasonal to seasonal timescales;

(4) identify available terrestrial or marine environmental data, or quantifiable gaps in such data, to improve the understanding of air-sea interactions;

(5) support the National Weather Service in reaching its target of a 30-minute warning time for severe weather through better predictive model algorithms driven by increasingly effective observations;

(6) acquire soil and moisture data to monitor soil moisture, vegetation water content, and moisture loss from evaporation, in support of operational forecasting, the National Integrated Drought Information System, and local commercial, agricultural, and emergency management needs;

(7) support the National Coordinated Soil Moisture Monitoring Network in acquiring soil moisture and related data for the development of decision support products and other information services;

(8) expand and enhance environmental observational networks in the roadway environment to provide real-time road weather and surface conditions for surface transportation and related economic sectors;

(9) obtain data in furtherance of this section only when demonstrably cost effective and meeting or exceeding data quality standards available to the Administration;

(10) subject to the requirement in paragraph (9), leverage existing networks of environmental

monitoring stations, including supplemental radar systems, to increase the quantity and density of environmental observations and data available to the Administration;

(11) provide the critical technical and administrative infrastructure needed to facilitate rapid integration and sustained use of new and emerging networks of environmental monitoring stations anticipated in coming years from non-Federal Government sources;

(12) coordinate with existing data developed by the Administration and used for forecasts, including data from the National Environmental Satellite, Data, and Information Service, the Integrated Ocean Observing System, the Global Ocean Monitoring and Observing Program, the National Data Buoy Center, and the National Ocean Service;

(13) identify and communicate to the Office of Oceanic and Atmospheric Research and other partners priorities of research and development needed to advance observations in the Program; and

(14) coordinate with satellite data and services acquired through the Commercial Data Program under section 302 of the Weather Research and

Forecasting Innovation Act of 2017, as amended by section 301 of this Act.

(c) FINANCIAL AND TECHNICAL ASSISTANCE.—

(1) IN GENERAL.—In furtherance of the Program, in a fiscal year, the Under Secretary may award not less than 10 percent of the amount appropriated for the Program for that fiscal year for financial assistance to State, Tribal, private, and academic entities seeking to build, expand, or upgrade equipment and capacity of mesonet systems.

(2) OTHER FEDERAL AWARDS.—Financial assistance under this subsection may be made in coordination with and in addition to awards from other Federal departments and agencies.

(3) AGREEMENTS.—Before receiving financial assistance under paragraph (1), the State, Tribal, private, or academic entity seeking financial assistance under this subsection shall enter into an agreement with the Under Secretary to provide data to the Program, subject to verification by the Program of the relative operational value and evaluation of the cost of such data, for use in weather prediction, severe weather warnings, and emergency response.

(4) ASSISTANCE AND OTHER SUPPORT.—The Under Secretary may provide—

(A) technical assistance, project implementation support, and guidance to State, Tribal, private, and academic entities seeking financial assistance under this subsection; and

(B) technical and financial assistance for maintenance of monitoring stations in areas of the country where it is financially unfeasible for 1 entity to operate such stations without such assistance.

(5) TERMS.—In providing financial assistance under this subsection, the Under Secretary shall establish terms to ensure that each State, Tribal, private, or academic entity that receives financial assistance under this subsection receives a level of support commensurate with the quality and other characteristics of the data to be provided.

(6) DETERMINATION.—A State, Tribal, private, or academic entity may only receive financial assistance under this subsection if the Under Secretary determines such entity will provide sufficient financial support from non-Federal Government sources and fully maintain the quality of the mesonet system and associated data standards required by the Program for a period of not less than 5 years.

(7) PRIORITY.—The Under Secretary shall prioritize providing assistance under paragraph (1) to not fewer than 1 entity in a remote area or an area that has a lack of environmental monitoring stations described in subsection (b)(1).

(d) ADVISORY COMMITTEE.—

(1) IN GENERAL.—The Under Secretary shall ensure the Program has an active advisory committee of subject matter experts to make recommendations to the Administration on the identification, implementation, procurement, and tracking of data needed to supplement the Program, and recommend improvements, expansions, and acquisitions of available data.

(2) DESIGNATION OF EXISTING COMMITTEE.—The Under Secretary may designate an existing advisory committee, subcommittee, or working group of the Federal Government, including the Science Advisory Board of the Administration, to carry out the requirement under paragraph (1).

(3) ACADEMIC EXPERTISE.—The advisory committee under paragraph (1), in consultation with the Program, shall include expertise from 1 or more institutions of higher education (as defined in section 101 of the Higher Education Act of 1965 (20

U.S.C. 1001)) to assist the advisory committee to identify, evaluate, and recommend potential partnerships, regional or subregional consortia, and collaborative methods that would expand the number of participants and volume of data in the Program.

(4) EVALUATION.—Not less than 30 days before any mid-award action to restructure, divest, or transfer atmospheric research activities or infrastructure, the advisory committee under paragraph (1) shall evaluate and provide a report to the appropriate committees of Congress on the effect of that transfer on weather forecasts, including forecast accuracy, future forecast improvements, Federal investments, and long-term datasets.

(5) LIMITATION.—The Director (as defined in section 1001) may not initiate any mid-award action to restructure, divest, or transfer atmospheric research activities or infrastructure until 30 days after the report under paragraph (4) is delivered to the appropriate committees of Congress.

(e) REGULAR BRIEFINGS.—

(1) IN GENERAL.—Not less frequently than annually through 2031, the Under Secretary shall provide regular briefings to the appropriate committees of Congress on all activities under the Program.

(2) BRIEFING CONTENT.—Each briefing required under paragraph (1) shall include information relating to the following:

(A) Efforts to implement the activities described in subsection (b).

(B) Any financial or technical assistance provided pursuant to subsection (c).

(C) Efforts to address recommendations received from the advisory committee under subsection (d), if any.

(D) The potential need and associated benefits of a coastal and ocean mesonet, or other emerging areas of weather data needs, taking into account existing data collection and monitoring activities.

(E) Progress toward eliminating gaps in weather observation data in States and regions of the United States.

(F) Any other topic the Under Secretary determines relevant.

(f) DEFINITION OF APPROPRIATE COMMITTEES OF CONGRESS.—In this section, the term ''appropriate committees of Congress'' means—

(1) the Committee on Science, Space, and Technology of the House of Representatives; and

(2) the Committee on Commerce, Science, and Transportation of the Senate.

(g) AUTHORIZATION OF APPROPRIATIONS.—From amounts authorized to be appropriated to the National Weather Service, there shall be available not more than the following amounts to carry out this section:

(1) $50,000,000 for fiscal year 2027.

(2) $55,000,000 for fiscal year 2028.

(3) $61,000,000 for fiscal year 2029.

(4) $68,000,000 for fiscal year 2030.

(5) $70,000,000 for fiscal year 2031.

SEC. 504. NATIONAL COORDINATED SOIL MOISTURE MONITORING NETWORK.

(a) IN GENERAL.—The Under Secretary, in collaboration with the Secretary of Agriculture, the Director of the United States Geological Survey, the Administrator of the National Aeronautics and Space Administration, and the heads of other relevant Federal departments and agencies, shall support the development, deployment, and maintenance of soil moisture monitoring networks by managing the National Coordinated Soil Moisture Monitoring Network (in this section referred to as the ''Network'') within the National Integrated Drought Information System.

(b) ACTIVITIES.—The Under Secretary shall ensure the Network includes activities that carry out the following:

(1) Establishing a visible, user-friendly website.

(2) Developing a set of criteria for high-quality data sources.

(3) Supporting research necessary to develop or improve soil moisture monitoring products at a national scale.

(4) Increasing the number of long-term, high-quality, in situ and remote sensing soil moisture monitoring stations across the United States.

(5) Sharing methodologies and validation protocols with the private sector.

(6) Developing, releasing, and promoting new nationwide point-based and gridded soil moisture data products.

(7) Supporting community outreach and data sharing to the network of individuals engaged with soil moisture monitoring, from data collection to end-user decision making.

SEC. 505. NATIONAL WATER CENTER.

Section 301 of the Coordinated Ocean Observations and Research Act of 2020 (42 U.S.C. 10371) is amended—

(1) in subsection (a)—

(A) in paragraph (1)(A)—

(i) in the matter preceding clause (i), by inserting ‘‘, within the Office of Water Prediction of the National Weather Service,’’ after ‘‘shall establish’’;

(ii) in clause (i), by striking ‘‘and’’ after the semicolon;

(iii) in clause (ii), by striking the period and inserting ‘‘; and’’; and

(iv) by adding at the end the following:

‘‘(iii) to lead the transition of water research by the Federal Government, including model development, into operations of the National Oceanic and Atmospheric Administration and the National Weather Service.’’;

(B) in paragraph (2), by adding at the end the following:

‘‘(F) Serving as the primary center within the National Oceanic and Atmospheric Administration for research, development, collaboration, and coordination of the water research and forecast activities of the Administration

and other centers and networks of the Federal Government, including those of the Department of Agriculture, the Army Corps of Engineers, the Bureau of Reclamation, the United States Geological Survey, and the Federal Emergency Management Agency.

''(G) Integrating and promoting consistency among national and regional hydrological forecast operations and service delivery.''; and

(C) by adding at the end the following:

''(3) INCORPORATION INTO UNIFIED FORECAST SYSTEM.—The Under Secretary shall use the Weather and Climate Operational Supercomputing System, or any successor system, to support the development and implementation of advanced water resources modeling capabilities under paragraph (2)(B) and shall incorporate those modeling capabilities into the unified forecast system.'';

(2) by striking subsection (b);

(3) by redesignating subsection (c) as subsection (b);

(4) by inserting after subsection (b), as redesignated by paragraph (3), the following:

''(c) ORGANIZATION AND ADMINISTRATION.—The Under Secretary, acting through the Director of the Office

of Water Prediction of the National Weather Service, shall—

''(1) supervise and oversee the administration, management, and operations of each River Forecast Center of the National Weather Service and coordinate those operations with the National Water Center;

''(2) administer the duties and activities of the National Oceanic and Atmospheric Administration related to the Cooperative Institute for Research to Operations in Hydrology, or any successor entity, and coordinate the activities of the Institute with the National Water Center; and

''(3) coordinate with relevant Federal departments and agencies, including the United States Geological Survey, to avoid unnecessary duplication of existing water observation, monitoring, and research activities.''; and

(5) in subsection (d)(4), by inserting before the period the following: ''and each of fiscal years 2027 through 2031''.

TITLE VI—HARMFUL ALGAL BLOOM AND HYPOXIA RESEARCH AND CONTROL

SEC. 601. AMENDMENTS TO THE HARMFUL ALGAL BLOOM AND HYPOXIA RESEARCH AND CONTROL ACT OF 1998.

(a) ASSESSMENTS.—

(1) IN GENERAL.—Section 603 of the Harmful Algal Bloom and Hypoxia Research and Control Act of 1998 (33 U.S.C. 4001) is amended—

(A) in the section heading, by striking ''**ASSESSMENTS**'' and inserting ''**TASK FORCE, ASSESSMENTS, AND ACTION STRATEGY**'';

(B) in subsection (a)—

(i) by redesignating paragraphs (13) and (14) as paragraphs (14) and (15), respectively; and

(ii) by inserting after paragraph (12) the following:

''(13) the Department of Energy;'';

(C) by striking subsections (b), (c), (d), (e), (g), (h), and (i) and redesignating subsection (f) as subsection (b);

(D) in subsection (b), as so redesignated—

(i) in paragraph (1), in the first sentence, by striking ''coastal waters including the Great Lakes'' and inserting ''marine, estuarine, and freshwater systems''; and

(ii) in paragraph (2)—

(I) by amending subparagraph (A) to read as follows:

''(A) examine—

''(i) the causes and ecological consequences of hypoxia on marine and aquatic species in their environments; and

''(ii) the costs of hypoxia, including impacts on food safety and security;'';

(II) by redesignating subparagraphs (B), (C), and (D) as subparagraphs (D), (E), and (F), respectively;

(III) by inserting after subparagraph (A) the following:

''(B) examine the effect of other environmental stressors on hypoxia;

''(C) evaluate alternatives for reducing, mitigating, and controlling hypoxia and its environmental impacts;''; and

(IV) in subparagraph (E), as redesignated by subclause (II), by strik-

ing ''hypoxia modeling and monitoring data'' and inserting ''hypoxia modeling, forecasting, and monitoring and observation data''; and

(E) by adding at the end the following:

''(c) ACTION STRATEGY AND SCIENTIFIC ASSESSMENT FOR MARINE AND FRESHWATER HARMFUL ALGAL BLOOMS.—

''(1) IN GENERAL.—Not less frequently than once every 5 years, the Task Force shall complete and submit to Congress an action strategy for harmful algal blooms in the United States.

''(2) ELEMENTS.—Each Action Strategy shall—

''(A) examine, and include a scientific assessment of, marine and freshwater harmful algal blooms, including such blooms—

''(i) in the Great Lakes;

''(ii) in the upper reaches of estuaries;

''(iii) in freshwater lakes and rivers;

''(iv) in coastal and marine waters; and

''(v) that originate in freshwater lakes or rivers and migrate to coastal waters;

"(B) examine the causes, ecological consequences or physiological consequences on biological functions, and economic or cultural impacts, including food safety and security and subsistence use, of harmful algal blooms;

"(C) examine the effect of other environmental stressors on harmful algal blooms;

"(D) examine potential methods and novel approaches to prevent, control, and mitigate harmful algal blooms and the potential ecological, subsistence use, and economic costs and benefits of such methods;

"(E) identify priorities for research needed to advance techniques and technologies to detect, predict, monitor, respond to, and minimize the occurrence, duration, and severity of harmful algal blooms, including recommendations to eliminate significant gaps in harmful algal bloom forecasting, monitoring, and observation data;

"(F) evaluate progress made by, and the needs of, activities and actions of the Task Force to prevent, control, and mitigate harmful algal blooms;

''(G) identify ways to improve coordination and prevent unnecessary duplication of effort among Federal departments and agencies with respect to research on harmful algal blooms; and

''(H) include regional chapters relating to the requirements described in this paragraph in order to highlight geographically and ecologically varied locations with significant ecological, subsistence use, cultural, and economic impacts from harmful algal blooms.

''(d) CONSULTATION.—In carrying out subsections (b) and (c), the Task Force shall consult with—

''(1) States, Indian tribes, and local governments; and

''(2) appropriate industries (including fisheries, agriculture, and fertilizer), academic institutions, and nongovernmental organizations with relevant expertise.''.

(2) CLERICAL AMENDMENT.—The table of contents in section 2 of the Coast Guard Authorization Act of 1998 (Public Law 105–383; 112 Stat. 3412; 136 Stat. 1268) is amended by striking the item relating to section 603 and inserting the following:

''Sec. 603. Task Force, assessments, and Action Strategy.''.

(3) CONFORMING AMENDMENT.—Section 102 of the Harmful Algal Bloom and Hypoxia Amendments Act of 2004 (33 U.S.C. 4001a) is amended by striking ''In developing'' and all that follows through ''management.''.

(b) NATIONAL HARMFUL ALGAL BLOOM AND HYPOXIA PROGRAM.—Section 603A of the Harmful Algal Bloom and Hypoxia Research and Control Act of 1998 (33 U.S.C. 4002) is amended—

(1) in subsection (a)—

(A) in paragraph (1)—

(i) by striking ''predicting,'' and inserting ''monitoring, observing, forecasting,''; and

(ii) by striking ''and'' after the semicolon; and

(B) by striking paragraph (2) and inserting the following:

''(2) the scientific assessment submitted under section 603(b); and

''(3) the Action Strategy.'';

(2) in subsection (c)—

(A) in paragraph (3), by striking ''ocean and Great Lakes science and management programs and centers'' and inserting ''programs

and centers relating to the science and management of marine, estuarine, and freshwater systems''; and

(B) in paragraph (5), by inserting ''while recognizing each agency is acting under its own independent mission and authority'' before the semicolon;

(3) in subsection (d), by striking ''Except as provided in subsection (h), the'' and inserting ''The'';

(4) in subsection (e)—

(A) by striking paragraph (2) and inserting the following:

''(2) examine the causes, ecological consequences, and costs of harmful algal blooms and hypoxia;'';

(B) in paragraph (3)—

(i) in subparagraph (B), by inserting '', including the annual Gulf of Mexico hypoxia zone mapping cruise'' after ''Program'';

(ii) in subparagraph (C), by striking ''and'' after the semicolon; and

(iii) by adding at the end the following:

"(E) to identify opportunities to improve monitoring of harmful algal blooms and hypoxia, with a particular focus on waters that may affect fisheries, public health, or subsistence harvest;

"(F) to evaluate adaptation and mitigation strategies to address the impacts of harmful algal blooms and hypoxia;

"(G) to support the resilience of the seafood industry to harmful algal blooms and to expand access to testing for harmful algal bloom toxins, including for subsistence and recreational harvesters, through innovative methods that increase the efficiency and effectiveness of such testing in rural and remote areas;

"(H) to support sustained observations to provide State and local entities, Indian tribes, and other entities access to real-time or near real-time observations data for decision making to protect human and ecological health and local economies; and

"(I) to assess the combined effects of harmful algal blooms, hypoxia, and stressors such as runoff and infrastructure changes on

marine, freshwater, or estuarine ecosystems and living resources;'';

(C) in paragraph (4), by striking ''agencies'' and inserting ''entities, regional coastal observing systems (as defined in section 12303 of the Integrated Coastal and Ocean Observation System Act of 2009 (33 U.S.C. 3602)),'';

(D) in paragraph (6), by inserting ''and communities'' after ''ecosystems'';

(E) in paragraph (8), by inserting ''and Indian tribes'' after ''managers'';

(F) in paragraph (9)(A), by striking '', tribal, and local stakeholders'' and inserting ''and local stakeholders and Indian tribes, Tribal organizations, and Native Hawaiian organizations'';

(G) by redesignating paragraphs (3), (4), (5), (6), (7), (8), (9), (10), and (11) as paragraphs (4), (5), (6), (7), (8), (9), (10), (12), and (13), respectively;

(H) by inserting after paragraph (2) the following:

''(3) consult with entities that are most dependent on coastal and water resources that may be im-

pacted by marine and freshwater harmful algal blooms and hypoxia, including—

''(A) State and local entities;

''(B) Indian tribes, Tribal organizations, and Native Hawaiian organizations;

''(C) island communities;

''(D) low-population rural communities;

''(E) subsistence communities; and

''(F) fisheries and recreation industries;''; and

(I) by inserting after paragraph (10), as redesignated by subparagraph (G), the following:

''(11) expand access to testing for harmful algal bloom toxins, including for subsistence and recreational harvesters, through innovative methods that increase the efficiency and effectiveness of such testing in rural and remote areas;'';

(5) by amending subsection (f) to read as follows:

''(f) COOPERATION; DUPLICATION OF EFFORT.—The Under Secretary shall work cooperatively with and avoid duplication of effort of other agencies on the Task Force and States, Indian tribes, Tribal organizations, Native

Hawaiian organizations, and nongovernmental organizations concerned with marine and freshwater issues.''; and

(6) by striking subsections (g), (h), and (i).

(c) NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION ACTIVITIES.—

(1) IN GENERAL.—Section 603B of the Harmful Algal Bloom and Hypoxia Research and Control Act of 1998 (33 U.S.C. 4003) is amended to read as follows:

''SEC. 603B. NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION ACTIVITIES.

''(a) IN GENERAL.—The Under Secretary shall—

''(1) carry out response activities for marine, coastal, and Great Lakes harmful algal bloom and hypoxia events;

''(2) develop and enhance operational harmful algal bloom observing and forecasting programs, including operational observations and forecasting, monitoring, modeling, data management, and information dissemination;

''(3) develop forecast modeling that includes the effect of hurricanes and other weather events on the resuspension of bioavailable nutrients in sediments and related interactions with harmful algal blooms;

''(4) enhance communication and coordination among Federal departments and agencies carrying out activities and research relating to marine and freshwater harmful algal blooms and hypoxia;

''(5) leverage existing resources and expertise available from local research universities and institutions; and

''(6) use cost effective methods in carrying out this section.

''(b) INTEGRATED COASTAL AND OCEAN OBSERVATION SYSTEM.—The collection of monitoring and observing data under this section shall comply with all data standards and protocols developed pursuant to the Integrated Coastal and Ocean Observation System Act of 2009 (33 U.S.C. 3601 et seq.). Such data shall be made available through the National Integrated Coastal and Ocean Observation System established under section 12304 of that Act (33 U.S.C. 3603).''.

(2) CLERICAL AMENDMENT.—The table of contents in section 2 of the Coast Guard Authorization Act of 1998 (Public Law 105–383; 112 Stat. 3412; 136 Stat. 1268) is amended by striking the item relating to section 603B and inserting the following:

''Sec. 603B. National Oceanic and Atmospheric Administration activities.''.

(d) ENVIRONMENTAL PROTECTION AGENCY ACTIVITIES.—

(1) IN GENERAL.—The Harmful Algal Bloom and Hypoxia Research and Control Act of 1998 is amended by inserting after section 603B (33 U.S.C. 4003) the following:

"SEC. 603C. ENVIRONMENTAL PROTECTION AGENCY ACTIVITIES.

''(a) IN GENERAL.—The Administrator shall—

''(1) carry out research on the ecology and human health impacts of freshwater harmful algal blooms and hypoxia events;

''(2) develop and enhance operational freshwater harmful algal bloom monitoring, observing, and forecasting programs in lakes, rivers, and reservoirs, and coordinate with the National Oceanic and Atmospheric Administration on such programs in the Great Lakes and estuaries (including tributaries thereof), including operational observations and forecasting, monitoring, modeling, data management, and information dissemination, to support event response, prioritization, prevention, adaptation, and mitigation activities;

''(3) enhance communication and coordination among Federal departments and agencies carrying out freshwater harmful algal bloom and hypoxia activities and research;

''(4) to the greatest extent practicable, leverage existing resources and expertise available from Federal and State partners and local research universities and institutions; and

''(5) use cost-effective methods in carrying out this section.

''(b) NONDUPLICATION.—The Administrator shall ensure that activities carried out under subsection (a) focus on new approaches to addressing freshwater harmful algal blooms and are not duplicative of existing research and development programs authorized by this title or any other law.''.

(2) CLERICAL AMENDMENT.—The table of contents in section 2 of the Coast Guard Authorization Act of 1998 (Public Law 105–383; 112 Stat. 3412; 136 Stat. 1268) is amended by inserting after the item relating to section 603B the following:

''Sec. 603C. Environmental Protection Agency activities.''.

(e) NATIONAL HARMFUL ALGAL BLOOM OBSERVING NETWORK.—

(1) IN GENERAL.—Section 606 of the Harmful Algal Bloom and Hypoxia Research and Control Act of 1998 (33 U.S.C. 4005) is amended to read as follows:

"SEC. 606. NATIONAL HARMFUL ALGAL BLOOM OBSERVING NETWORK.

''(a) IN GENERAL.—The Under Secretary, acting through the National Centers for Coastal Ocean Science and the Integrated Ocean Observing System of the National Oceanic and Atmospheric Administration, shall integrate Federal, State, regional, and local observing capabilities to establish a national network of observing systems for the monitoring, detection, and forecasting of harmful algal blooms by leveraging the capacity of regional associations of the Integrated Ocean Observing System, including through the incorporation of emerging technologies and new data integration methods.

''(b) COORDINATION AND DATA ASSEMBLY.—In carrying out subsection (a), the Program Office of the Integrated Ocean Observing System shall—

''(1) coordinate with the National Centers for Coastal Ocean Science regarding observations, data integration, and information dissemination;

''(2) organize, integrate, disseminate, and provide a central architecture to support ecological forecasting of harmful algal blooms; and

''(3) coordinate with the Water Quality Portal to store and serve discrete data related to the monitoring of freshwater, estuarine, and coastal harmful algal blooms.''.

(2) CLERICAL AMENDMENT.—The table of contents in section 2 of the Coast Guard Authorization Act of 1998 (Public Law 105–383; 112 Stat. 3412; 136 Stat. 1268) is amended by striking the item relating to section 606 and inserting the following:

''Sec. 606. National harmful algal bloom observing network.''.

(f) NATIONAL-LEVEL INCUBATOR PROGRAM.—

(1) IN GENERAL.—The Harmful Algal Bloom and Hypoxia Research and Control Act of 1998 is amended by inserting after section 606 (33 U.S.C. 4005) the following:

''SEC. 606A. NATIONAL-LEVEL INCUBATOR PROGRAM.

''(a) IN GENERAL.—The Under Secretary, in collaboration with the Administrator and research universities and institutions, shall establish a national-level incubator program (in this section referred to as the 'program') to increase the number of strategies, technologies, and measures available to prevent, mitigate, and control harmful algal blooms.

''(b) FRAMEWORK.—The program shall establish a framework for preliminary assessments of novel strategies, technologies, and measures to prevent, mitigate, and control harmful algal blooms in order to determine the potential effectiveness and scalability of such technologies.

''(c) FUNDING.—The program shall provide merit-based funding, using amounts otherwise available to the

Under Secretary for the award of grants, for strategies, technologies, and measures that eliminate or reduce, through biological, chemical, or physical means, the levels of harmful algae and associated toxins resulting from harmful algal blooms.

''(d) DATABASE.—The program shall include a database for cataloging the licensing and permitting requirements, economic costs, feasibility, effectiveness, and scalability of novel and established strategies, technologies, and measures to prevent, mitigate, and control harmful algal blooms.

''(e) PRIORITIZATION.—In carrying out the program, the Under Secretary shall prioritize proposed cost-effective strategies, technologies, and measures that would, to the maximum extent practicable—

''(1) protect key habitats for fish and wildlife;

''(2) maintain biodiversity;

''(3) protect public health;

''(4) protect coastal resources of national, historical, and cultural significance; or

''(5) benefit low-income communities, Indian tribes, and rural communities.''.

(2) CLERICAL AMENDMENT.—The table of contents in section 2 of the Coast Guard Authorization Act of 1998 (Public Law 105–383; 112 Stat. 3412;

136 Stat. 1268) is amended by inserting after the item relating to section 606 the following:

"Sec. 606A. National-level incubator program.".

(g) DEFINITIONS.—Section 609 of the Harmful Algal Bloom and Hypoxia Research and Control Act of 1998 (33 U.S.C. 4008) is amended—

(1) in paragraph (1), by striking "means the comprehensive research plan and action strategy established under section 603B" and inserting "means the action strategy for harmful algal blooms in the United States most recently submitted under section 603(c)";

(2) by amending paragraph (3) to read as follows:

"(3) HARMFUL ALGAL BLOOM.—The term 'harmful algal bloom' means a high concentration of marine or freshwater algae (including diatoms), macroalgae (including Sargassum), or cyanobacteria resulting in nuisance conditions or harmful impacts on marine and freshwater ecosystems, subsistence resources, communities, or human health through the production of toxic compounds or other biological, chemical, or physical impacts of the bloom.";

(3) by striking paragraph (9);

(4) by redesignating paragraphs (4), (5), (6), (7), and (8) as paragraphs (5), (8), (9), (11), and (13), respectively;

(5) by inserting after paragraph (3) the following:

''(4) HARMFUL ALGAL BLOOM AND HYPOXIA EVENT.—The term 'harmful algal bloom and hypoxia event' means the occurrence of a harmful algal bloom or hypoxia as a result of a natural, anthropogenic, or undetermined cause.'';

(6) in paragraph (5), as redesignated by paragraph (4)—

(A) by striking ''aquatic'' and inserting ''marine or freshwater''; and

(B) by striking ''resident'' and inserting ''marine or freshwater'';

(7) by inserting after paragraph (5), as redesignated by paragraph (4), the following:

''(6) INDIAN TRIBE.—The term 'Indian tribe' has the meaning given that term in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 5304).

''(7) NATIVE HAWAIIAN ORGANIZATION.—The term 'Native Hawaiian organization' has the meaning given that term in section 6207 of the Elemen-

tary and Secondary Education Act of 1965 (20 U.S.C. 7517) and includes the Department of Hawaiian Home Lands and the Office of Hawaiian Affairs.'';

(8) by inserting after paragraph (9), as redesignated by paragraph (4), the following:

''(10) SUBSISTENCE USE.—The term 'subsistence use' means the customary and traditional use of fish, wildlife, or other freshwater, coastal, or marine resources by any individual or community to meet personal or family needs, including essential economic, nutritional, or cultural applications.''; and

(9) by inserting after paragraph (11), as redesignated by paragraph (4), the following:

''(12) TRIBAL ORGANIZATION.—The term 'Tribal organization' has the meaning given that term in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 5304).''.

(h) AUTHORIZATION OF APPROPRIATIONS.—Section 610 of the Harmful Algal Bloom and Hypoxia Research and Control Act of 1998 (33 U.S.C. 4009) is amended—

(1) by amending subsection (a) to read as follows:

''(a) IN GENERAL.—There is authorized to be appropriated to carry out this title, for each of fiscal years 2027 through 2031—

''(1) $19,500,000 to the Under Secretary; and

''(2) $8,000,000 to the Administrator.''; and

(2) by adding at the end the following:

''(c) TRANSFER AUTHORITY.—As specifically provided in advance in appropriations Acts, the Under Secretary or the Administrator may transfer funds made available to carry out this title to the head of any Federal department or agency, with the concurrence of such head, to carry out, as appropriate, relevant provisions of this title and section 9(g) of the National Integrated Drought Information System Reauthorization Act of 2018 (33 U.S.C. 4010).''.

SEC. 602. OTHER HARMFUL ALGAL BLOOM AND HYPOXIA MATTERS.

Section 9(g) of the National Integrated Drought Information System Reauthorization Act of 2018 (33 U.S.C. 4010) is amended—

(1) in paragraph (1)—

(A) in subparagraph (B), by adding at the end the following new sentence: ''The appropriate Federal official may waive the non-Federal share requirements of the preceding sen-

tence if such official determines no reasonable means are available through which the recipient of the Federal share can meet the non-Federal share requirement.''; and

(B) by adding at the end the following:

''(D) CONTRACT, COOPERATIVE AGREEMENT, AND GRANT AUTHORITY.—The appropriate Federal official may enter into contracts, cooperative agreements, and grants with States, Indian tribes, Tribal organizations, Native Hawaiian organizations, local governments, or other entities to pay for or reimburse costs incurred by such entities for the purposes of supporting the determination of, and assessing the environmental, economic, subsistence use, and public health effects of, an event of national significance.'';

(2) in paragraph (2)—

(A) in subparagraph (A), by inserting ''a leadership official of an affected Indian tribe, the executive official of the District of Columbia, or the executive official of an affected territory or possession of the United States,'' after ''State,''; and

(B) in subparagraph (B), by striking ''consider'' and all that follows through ''boundary.'' and inserting ''consider factors such as—

''(i) the risk to public health and the potential severity of the detrimental environmental effects of the hypoxia or harmful algal bloom event, as indicated by—

''(I) data on shellfish or water quality obtained through sampling programs, including baseline data, and regulatory or advisory thresholds established to explain management actions related to the event;

''(II) toxin levels in fish, marine mammals, seabirds, shellfish, or water during the event;

''(III) toxic aerosols produced during the event, including potential human exposures to toxic aerosols;

''(IV) reports of human or animal illnesses or mortalities during the event;

''(V) any closures of fishing or shellfish harvesting locations or rec-

reational public waters, including beaches, during the event;

''(VI) the duration and spatial extent of the event; or

''(VII) impacts to habitats or ecosystems associated with the event;

''(ii) the potential economic, food safety and security, and subsistence impacts associated with the hypoxia or harmful algal bloom event, including to fisheries and aquaculture, recreation and tourism, monitoring and management, resource use, and event response activities, assessed in comparison with historical data from when a State or region did not experience such an event, as possible, as indicated by—

''(I) increases in public health expenditures;

''(II) losses to commercial fisheries and aquaculture industries, recreation and tourism, real estate, and other impacted industries or businesses;

''(III) increases in monitoring and management expenditures, includ-

ing costs incurred for event response and clean-up (such as for beach clean-up following an influx of biomass or a fish-kill) by public or private sectors; or

''(IV) impacts to subsistence resources, including nutritional, resource use, and economic effects on subsistence communities;

''(iii) the relative magnitude of those impacts in relation to past occurrences of hypoxia or harmful algal bloom events that occur on a recurrent or annual basis; and

''(iv) the geographic scope of the hypoxia or harmful algal bloom event, including the potential of the event to affect several municipalities, to affect more than 1 State, or to cross an international boundary.'';

(3) in paragraph (3), by adding at the end the following:

''(D) INDIAN TRIBE.—The term 'Indian tribe' has the meaning given that term in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 5304).

"(E) NATIVE HAWAIIAN ORGANIZATION.—The term 'Native Hawaiian organization' has the meaning given that term in section 6207 of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 7517) and includes the Department of Hawaiian Home Lands and the Office of Hawaiian Affairs.

"(F) SUBSISTENCE USE.—The term 'subsistence use' means the customary and traditional use of fish, wildlife, or other freshwater, coastal, or marine resources by any individual or community to meet personal or family needs, including essential economic, nutritional, or cultural applications.

"(G) TRIBAL ORGANIZATION.—The term 'Tribal organization' has the meaning given that term in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 5304)."; and

(4) by adding at the end the following:

"(4) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated to carry out this subsection $2,000,000 for each of fiscal years 2027 through 2031, to remain available until expended.".

TITLE VII—FIRE READY NATION

SEC. 701. DEFINITIONS.

In this title:

(1) ADMINISTRATION.—The term ''Administration'' means the National Oceanic and Atmospheric Administration.

(2) APPROPRIATE COMMITTEES OF CONGRESS.—The term ''appropriate committees of Congress'' means—

(A) the Committee on Science, Space, and Technology of the House of Representatives; and

(B) the Committee on Commerce, Science, and Transportation of the Senate.

(3) EARTH SYSTEM MODEL.—The term ''Earth system model'' means a mathematical model containing all relevant components of the Earth, namely the atmosphere, oceans, land, cryosphere, and biosphere.

(4) FIRE ENVIRONMENT.—The term ''fire environment'' means—

(A) the environmental conditions, such as soil moisture, vegetation, topography, snowpack, atmospheric temperature, moisture, and wind, that influence—

(i) fuel and fire behavior; and

(ii) the emission, chemical evolution, and transport of wildfire smoke; and

(B) the associated environmental impacts occurring during and after fire events.

(5) FIRE WEATHER.—The term ''fire weather'' means the weather conditions that influence the start, spread, character, or behavior of wildfires and relevant meteorological and chemical phenomena, including air quality, wildfire smoke, and meteorological parameters such as relative humidity, air temperature, wind speed and direction, and atmospheric composition and chemistry, including emissions and mixing heights.

(6) IMPACT-BASED DECISION SUPPORT SERVICES.—The term ''impact-based decision support services'' means scientific advice and interpretative services the Administration provides to help core partners, such as emergency personnel and public safety officials, make decisions when the information impacts the lives and livelihoods of the people of the United States.

(7) INDIAN TRIBE.—The term ''Indian tribe'' has the meaning given that term in section 4 of the

Indian Self-Determination and Education Assistance Act (25 U.S.C. 5304).

(8) NATIVE HAWAIIAN ORGANIZATION.—The term ''Native Hawaiian organization'' has the meaning given that term in section 6207 of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 7517), including the Department of Hawaiian Home Lands and the Office of Hawaiian Affairs.

(9) STATE.—The term ''State'' means a State, the District of Columbia, the Commonwealth of Puerto Rico, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, the United States Virgin Islands, the Federated States of Micronesia, the Republic of the Marshall Islands, or the Republic of Palau.

(10) TRIBAL ORGANIZATION.—The term ''Tribal organization'' has the meaning given that term in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 5304).

SEC. 702. ESTABLISHMENT OF FIRE WEATHER SERVICES PROGRAM.

(a) IN GENERAL.—The Under Secretary shall establish and maintain a coordinated fire weather services program among the offices of the Administration in existence as of the date of the enactment of this Act.

(b) PROGRAM FUNCTIONS.—The functions of the program established under subsection (a), consistent with the priorities described in section 101 of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8511), shall be—

(1) to support readiness, responsiveness, understanding, and resilience of the United States to wildfires, fire weather, wildfire smoke, post-fire flooding and debris flows, and associated hazards to and impacts on built and natural environments;

(2) to collaboratively develop and disseminate accurate, precise, effective, and timely risk communications, forecasts, watches, and warnings relating to wildfires, fire weather, wildfire smoke, post-fire flooding and debris flows, and other associated conditions, hazards, and impacts, as applicable, with relevant Federal departments and agencies;

(3) to partner with and support the public, Federal and State government entities, Indian tribes, Native Hawaiian organizations, and academic and local partners through the development of capabilities, impact-based decision support services, and overall service delivery and utility related to fire weather;

(4) to conduct and support research and development of new and innovative models, technologies, techniques, products, systems, processes, and procedures to predict and improve understanding of wildfires, fire weather, related air quality, post-fire flooding and debris flows, and the fire environment;

(5) to develop processes to transition research into operational use and inform additional areas of research to deliver fire weather products, services, and decision support tools to operational users and platforms;

(6) to develop communications networks and strategies to improve the timeliness, reliability, and accessibility of fire forecasts, warning services, and information about current fire location, for remote, isolated, and rural communities, including communities where the public acts as the first responder to wildfire; and

(7) to develop, in coordination with relevant Federal departments and agencies, impact-based decision support services that operationalize and integrate the functions described in paragraphs (1) through (6) in order to provide comprehensive impact-based decision support services that encompass the fire environment.

(c) PROGRAM PRIORITIES.—In developing and implementing the program established under subsection (a), the Under Secretary shall prioritize—

(1) development of a fire weather-enabled Earth system model and data assimilation systems that—

(A) are capable of prediction and forecasting across relevant spatial and temporal scales;

(B) include variables associated with fire weather and the fire environment;

(C) improve understanding of environmental factors that influence fire weather risk, frequency, severity, and duration;

(D) incorporate emerging techniques such as artificial intelligence, machine learning, and cloud computing; and

(E) use a rapidly deployable network of rain gauges for post-fire hazard monitoring;

(2) advancement of existing and new observational capabilities, including satellite-, airborne-, air-, and ground-based systems and technologies, and social networking and other public information-gathering applications that—

(A) identify—

(i) high-risk pre-ignition conditions;

(ii) conditions that influence fire behavior and spread including those conditions that suppress active fire events; and

(iii) fire weather threat levels;

(B) support real-time notification and monitoring of ignitions;

(C) support observations and data collection of fire weather and fire environment variables, including profiles of wildfire smoke, winds, temperature, and humidity, for development of the model and systems under paragraph (1); and

(D) support forecasts and research that mitigate the impacts of wildfires on human life, health, and the economy;

(3) development and implementation of advanced and user-oriented impact-based decision tools, science, and technologies that—

(A) ensure real-time and retrospective data, products, and services are findable, accessible, interoperable, usable, inform further research, and are analysis- and decision-ready;

(B) provide targeted information throughout the fire lifecycle including pre-ignition, de-

tection, forecasting, post-fire, and monitoring phases; and

(C) support early assessment of post-fire hazards, such as air quality, debris flows, mudslides, and flooding; and

(4) ensuring the parity of access to and support from the tools, science, and technologies developed under this subsection for remote, isolated, and rural communities.

(d) PROGRAM ACTIVITIES.—In developing and implementing the program established under subsection (a), the Under Secretary may—

(1) conduct relevant physical and social science research activities in support of the functions described in subsection (b) and the priorities described in subsection (c);

(2) assess fuel characteristics, in coordination with Federal land management agencies and Federal science agencies, including moisture, loading, and other parameters used to determine fire risk levels and outlooks;

(3) support and conduct research that assesses impacts to marine, riverine, watershed, and other relevant ecosystems, which may include forest and

rangeland ecosystems, resulting from activities associated with mitigation of and response to wildfires;

(4) support and conduct research relating to the causes, contributing factors and impacts of wildfires, fire weather, fire risk, wildfire smoke, and associated conditions, risks, and impacts;

(5) develop wildfire smoke and air quality forecasts, forecast guidance, and prescribed burn weather forecasts, and conduct research on the impact of such forecasts on response behavior that minimizes health-related impacts from wildfire smoke exposure;

(6) use, in coordination with Federal, State, and local governments, Indian tribes, Tribal organizations, Native Hawaiian organizations, and other relevant partners, as appropriate, wildland fuels information and fire resource intelligence to inform fire environment impact-based decision support services and products for safety;

(7) work with Federal departments and agencies to provide data, tools, and services to support the implementation of mitigation measures by such agencies;

(8) provide training and support to improve the communication of impact-based decision support

services and products to the public, including recommended protective actions;

(9) provide comprehensive training to ensure staff of the program established under subsection (a) is properly equipped to deliver the impact-based decision support services and products described in paragraphs (1) through (6); and

(10) acquire, through contracted purchase, private sector-produced observational data to fill identified gaps, as needed.

(e) PARITY FOR REMOTE, ISOLATED, AND RURAL COMMUNITIES.—In developing and implementing the program established under subsection (a), the Under Secretary shall ensure parity of coverage and programmatic activity for remote, isolated, and rural communities, including communities where the public acts as the first responder to wildfire.

(f) COLLABORATION.—The Under Secretary shall, as the Under Secretary considers appropriate, collaborate with partners in the weather enterprise, academic institutions, States, Indian tribes, Tribal organizations, Native Hawaiian organizations, local partners, and Federal departments and agencies in the development and implementation of the program established under subsection (a).

(g) AGREEMENTS.—In carrying out the activities under this title and the amendments made by this title, the Under Secretary may provide support to non-Federal entities by making funds and resources available through—

(1) competitive grants;

(2) contracts under the mobility program under subchapter VI of chapter 33 of title 5, United States Code (commonly referred to as the ''Intergovernmental Personnel Act Mobility Program'');

(3) cooperative agreements; and

(4) co-location agreements as described in section 502 of the National Oceanic and Atmospheric Administration Commissioned Officer Corps Amendments Act of 2020 (33 U.S.C. 851 note prec.).

(h) PROGRAM ADMINISTRATION PLAN.—

(1) IN GENERAL.—Not later than 180 days after the date of the enactment of this Act, the Under Secretary shall submit to the appropriate committees of Congress a plan that details how the program established under subsection (a) will be administered and governed within the Administration.

(2) ELEMENTS.—The plan required by paragraph (1) should include a description of—

(A) how the functions described in subsection (b), the priorities described in subsection (c), and the activities described in subsection (d) will be distributed among the line offices of the Administration; and

(B) the mechanisms in place to ensure seamless coordination among those offices.

SEC. 703. FIRE WEATHER TESTBED.

(a) ESTABLISHMENT OF FIRE WEATHER TESTBED.—The Under Secretary shall establish a fire weather testbed that enables engagement across the Federal Government, State and local governments, academia, private and federally funded research laboratories, the private sector, and end-users in order to evaluate the accuracy and usability of technology, models, fire weather products and services, and other research to accelerate the implementation, transition to operations, and use of new capabilities by the Administration, Federal and land management agencies, and other relevant stakeholders.

(b) UNCREWED SYSTEMS.—

(1) IN GENERAL.—The Under Secretary shall—

(A) establish and carry out a research and development program to support the application of uncrewed systems technologies to improve data collection in support of modeling, observa-

tions, predictions, forecasts, and impact-based decision support services, and for other purposes of the Administration;

(B) transition uncrewed systems technologies from research to operations as the Under Secretary considers appropriate; and

(C) coordinate with other Federal departments and agencies that may be developing uncrewed systems and related technologies to meet the challenges of wildland fire management.

(2) PILOT PROJECTS REQUIRED.—In carrying out paragraph (1), the Under Secretary shall conduct pilot projects of uncrewed systems for fire weather and fire environment observations, including—

(A) testing of uncrewed systems in approximations of real-world scenarios;

(B) assessment of the utility of meteorological data collected from fire response and assessment aircraft;

(C) input of the collected data into appropriate models to predict fire behavior, including coupled atmosphere and fire models; and

(D) collection of best management practices for deployment of uncrewed systems and other remote data technology, including for communication and coordination between the stakeholders described in subsection (a).

(3) SAVINGS CLAUSE.—

(A) IN GENERAL.—In carrying out activities under this subsection, the Under Secretary shall ensure that any testing or deployment of uncrewed systems follow procedures, restrictions, and protocols established by the heads of the Federal departments and agencies with statutory or regulatory jurisdiction over any airspace in which wildfire response activities are conducted during an active wildfire event.

(B) CONSULTATION AND COORDINATION.—The Under Secretary shall consult and coordinate with relevant Federal land management agencies, Federal science agencies, and the Federal Aviation Administration to develop processes for the appropriate deployment of the systems described in subparagraph (A).

(c) ADDITIONAL PILOT PROJECTS.—The Under Secretary shall establish additional pilot projects relating to

the fire weather testbed that may include the following elements:

(1) Advanced products to detect fire from satellites.

(2) Procurement and use of commercial data.

(3) Investigation and evaluation of information needs of users and decision makers.

SEC. 704. DATA MANAGEMENT AND TECHNOLOGY MODERNIZATION.

(a) DATA AVAILABILITY AND MANAGEMENT.—Section 301 of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8531) is amended—

(1) by redesignating subsections (f) and (g) as subsections (g) and (h), respectively; and

(2) by inserting after subsection (e) the following:

''(f) DATA AVAILABILITY AND MANAGEMENT.—

''(1) IN GENERAL.—The Under Secretary shall—

''(A) make data and metadata collected or generated by the National Oceanic and Atmospheric Administration that the Under Secretary has the legal right to redistribute fully and openly available, in accordance with chapter 35 of title 44, United States Code, and the Foun-

dations for Evidence-Based Policymaking Act of 2018 (Public Law 115–435; 132 Stat. 5529) and the amendments made by that Act, and preserve and curate such data and metadata, in accordance with chapter 31 of title 44, United States Code (commonly known as the 'Federal Records Act of 1950'), in order to maximize use of such data and metadata; and

''(B) manage and steward the access, archival, and retrieval activities for the data and metadata described in subparagraph (A) by—

''(i) using—

''(I) enterprise-wide infrastructure, emerging technologies, commercial partnerships, and the skilled workforce needed to provide appropriate data management from collection to broad access; and

''(II) associated information services; and

''(ii) pursuing the maximum interoperability of data and information by—

''(I) leveraging data, information, knowledge, and tools from across the Federal Government to support equi-

table access, cross-sectoral collaboration and innovation, and local planning and decision making; and

''(II) developing standards and practices for the adoption and citation of digital object identifiers for datasets, models, and analytical tools.

''(2) COLLABORATION.—In carrying out this subsection, the Under Secretary shall collaborate with such Federal partners and stakeholders as the Under Secretary considers relevant—

''(A) to develop standards to pursue maximum interoperability of data, information, knowledge, and tools across the Federal Government, convert historical records into common digital formats, and improve access and usability of data by partners and stakeholders;

''(B) to identify and solicit relevant data from Federal and international partners and other relevant stakeholders, as the Under Secretary considers appropriate; and

''(C) to develop standards and practices for the adoption and citation of digital object identifiers for datasets, models, and analytical tools.''.

(b) WILDFIRE TECHNOLOGY MODERNIZATION.—Section 1114 of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (43 U.S.C. 1748b–1) is amended—

(1) in subsection (c)(3), by inserting ''the National Oceanic and Atmospheric Administration,'' after ''Federal Aviation Administration,'';

(2) in subsection (e)(2)—

(A) by redesignating subparagraph (B) as subparagraph (C); and

(B) by inserting after subparagraph (A) the following:

''(B) CONSULTATION.—

''(i) IN GENERAL.—In carrying out subparagraph (A), the Secretaries shall consult with the Under Secretary of Commerce for Oceans and Atmosphere regarding any development of impact-based decision support services that relate to wildfire-related activities of the National Oceanic and Atmospheric Administration.

''(ii) DEFINITION OF IMPACT-BASED DECISION SUPPORT SERVICES.—In this subparagraph, the term 'impact-based decision support services' means scientific ad-

vice and interpretative services the National Oceanic and Atmospheric Administration provides to help core partners, such as emergency personnel and public safety officials, make decisions when the information impacts the lives and livelihoods of the people of the United States.''; and

(3) in subsection (f)—

(A) by redesignating paragraphs (1) and (2) as subparagraphs (A) and (B), respectively, and moving such subparagraphs, as so redesignated, 2 ems to the right;

(B) by striking ''The Secretaries'' and inserting the following:

''(1) IN GENERAL.—The Secretaries''; and

(C) by adding at the end the following:

''(2) COLLABORATION.—In carrying out paragraph (1), the Secretaries shall collaborate with the Under Secretary of Commerce for Oceans and Atmosphere to improve coordination, utility of systems and assets, and interoperability of data for wildfire smoke prediction, forecasting, and modeling.''.

(c) DIGITAL PRESENCE.—

(1) IN GENERAL.—The Under Secretary shall develop and maintain a comprehensive, centralized,

and publicly accessible digital presence designed to promote findability, accessibility, interoperability, usability, and utility of the services, tools, data, and information produced by the program established under section 702(a).

(2) DIGITAL PLATFORM AND TOOLS.—In carrying out paragraph (1), the Under Secretary shall seek to ensure the digital platform and tools of the Administration integrate geospatial data, decision support tools, training, and best practices to provide real-time fire weather forecasts and address fire-related issues and needs.

(d) HIGH-PERFORMANCE COMPUTING.—

(1) IN GENERAL.—The Under Secretary shall seek to acquire sufficient high-performance computing resources and capacity for research, operations, and data storage in support of the program established under section 702(a).

(2) CONSIDERATIONS.—In acquiring high-performance computing capacity under paragraph (1), the Under Secretary shall consider requirements needed for—

(A) conducting research, development, and testbed experiments;

(B) the transition of research and testbed developments into operations;

(C) sustaining capabilities in operations;

(D) capabilities existing in other Federal departments and agencies and the commercial sector; and

(E) skilled workforce development.

SEC. 705. SURVEYS AND ASSESSMENTS.

(a) POST-FIRE WEATHER SURVEYS AND ASSESSMENTS.—

(1) ANNUAL POST-FIRE-WEATHER-SEASON SURVEY AND ASSESSMENT.—

(A) IN GENERAL.—During the second winter following the date of the enactment of this Act, and each year thereafter, the Under Secretary shall conduct a post-fire-weather-season survey and assessment.

(B) ELEMENTS.—After conducting a post-fire-weather-season survey and assessment under subparagraph (A), the Under Secretary shall—

(i) investigate any gaps in weather data collected during the assessment;

(ii) identify and implement strategies and procedures to improve program services and information dissemination;

(iii) update systems, processes, strategies, and procedures to enhance the efficiency and reliability of weather data obtained from the assessment;

(iv) evaluate the accuracy and efficacy of physical fire weather forecasting information for each incident included in the survey and assessment; and

(v) assess and refine performance measures, as needed.

(2) SURVEYS AND ASSESSMENTS FOLLOWING INDIVIDUAL WILDFIRE EVENTS.—The Under Secretary may conduct surveys and assessments following individual wildfire events as the Under Secretary determines necessary.

(3) GOAL.—In carrying out activities under this subsection, the Under Secretary shall seek to increase the number of impact studies on communities following a wildfire, including by surveying individual and collective responses and incorporating other applicable topics of social science research.

(4) COORDINATION.—In conducting any survey or assessment under this subsection, the Under Secretary shall coordinate with Federal, State, and local partners, Indian tribes, Native Hawaiian organizations, private entities, and such institutions of higher education as the Under Secretary considers relevant in order to—

(A) improve operations and collaboration; and

(B) optimize data collection, sharing, integration, assimilation, and dissemination.

(5) DATA AVAILABILITY.—The Under Secretary shall make the data and findings obtained from each survey and assessment conducted under this subsection available to the public in an accessible digital format, as soon as practicable, after conducting the assessment.

(6) SERVICE IMPROVEMENTS.—The Under Secretary shall make best efforts to incorporate the results and recommendations of each survey and assessment conducted under this subsection into the research and development plan under subsection 708(b) and operations of the Administration.

(7) ANNUAL BRIEFING.—Not less frequently than once each year, the Under Secretary shall join

other relevant departments and agencies to provide a briefing to the appropriate committees of Congress that provides—

(A) an overview of the prior fire season; and

(B) an outlook of the upcoming fire season.

(b) JOINT ASSESSMENT AND PLAN FOR AUTOMATED SURFACE OBSERVING SYSTEM.—

(1) IN GENERAL.—The Under Secretary, in collaboration with the Administrator of the Federal Aviation Administration and the Secretary of Defense, shall—

(A) conduct an assessment of resources, personnel, procedures, and activities necessary to maximize the functionality and utility of the automated surface observing system of the United States that identifies—

(i) key system upgrades needed to improve observation quality and utility for weather forecasting, aviation safety, and other users;

(ii) improvements needed in observations within the planetary boundary layer, including mixing height;

(iii) improvements needed in public accessibility of observational data;

(iv) improvements needed to reduce latency in reporting of observational data;

(v) relevant data to be collected for the production of forecasts or forecast guidance relating to atmospheric composition, including particulate and air quality data related to wildfires, and aviation safety;

(vi) areas of concern regarding operational continuity and reliability of the system, which may include needs for overnight staff, particularly in remote and rural areas and areas where system failure would have the greatest negative impact to the community;

(vii) stewardship, data handling, data distribution, and product generation needs arising from upgrading and changing the automated surface observation systems;

(viii) possible solutions for areas of concern identified under clause (vi), including with respect to the potential use of backup systems, power and communication

system reliability, staffing needs and personnel location, and the acquisition of critical component backups and proper storage location to ensure rapid system repair necessary to ensure system operational continuity; and

(ix) research, development, and transition to operations needed to develop advanced data collection, quality control, and distribution so that the data are provided to models, users, and decision support systems in a timely manner; and

(B) develop and implement a plan that addresses the findings of the assessment conducted under subparagraph (A), including by seeking and allocating resources necessary to ensure that system upgrades are standardized across the Administration, the Federal Aviation Administration, and the Department of Defense to the extent practicable.

(2) STANDARDIZATION.—Any system standardization implemented under paragraph (1)(B) shall not impede activities to upgrade or improve individual units of the system.

(3) REMOTE AUTOMATIC WEATHER STATION COORDINATION.—The Under Secretary, in collaboration with relevant Federal departments and agencies and the National Interagency Coordination Center, shall assess and develop cooperative agreements to improve coordination, interoperability standards, operations, and placement of remote automatic weather stations for the purpose of improving utility and coverage of remote automatic weather stations, automated surface observation systems, wildfire smoke monitoring platforms, and other similar stations and systems for weather operations.

(4) REPORT TO CONGRESS.—

(A) IN GENERAL.—Not later than 2 years after the date of the enactment of this Act, the Under Secretary, in collaboration with the Administrator of the Federal Aviation Administration and the Secretary of Defense, shall submit to the appropriate committees of Congress a report that—

(i) details the findings of the assessment required by subparagraph (A) of paragraph (1); and

(ii) details the plan required by subparagraph (B) of such paragraph.

(B) ELEMENTS.—The report required by subparagraph (A) shall include a detailed assessment of appropriations required—

(i) to address the findings of the assessment required by subparagraph (A) of paragraph (1); and

(ii) to implement the plan required by subparagraph (B) of such paragraph.

SEC. 706. INCIDENT METEOROLOGIST SERVICE.

(a) ESTABLISHMENT.—The Under Secretary shall establish and maintain an Incident Meteorologist Service within the National Weather Service (in this section referred to as the ''Service'').

(b) INCLUSION OF EXISTING INCIDENT METEOROLOGISTS.—The Service shall include—

(1) the incident meteorologists of the Administration as of the date of the enactment of this Act; and

(2) such incident meteorologists of the Administration as may be appointed after such date.

(c) FUNCTIONS.—The Service shall provide—

(1) on-site impact-based decision support services to Federal, State, and local government emergency response agencies, Indian tribes, and Native Hawaiian organizations preceding, during, and fol-

lowing significant weather-related events, such as wildland fires, that threaten human life, property, or the economy; and

(2) support to Federal, State, and local government decisionmakers, partners, and stakeholders, Indian tribes, Tribal organizations, and Native Hawaiian organizations for seasonal planning and pre-fire mitigation activities.

(d) DEPLOYMENT.—The Service shall be deployed—

(1) as determined by the Under Secretary; or

(2) at the request of the head of another Federal department or agency and with the approval of the Under Secretary.

(e) STAFFING AND RESOURCES.—In establishing and maintaining the Service, the Under Secretary shall identify, acquire, and maintain adequate levels of staffing and resources to meet user needs.

(f) SUPPORT FOR INCIDENT METEOROLOGISTS.—The Under Secretary shall provide resources, access to real-time fire weather forecasts, training, administrative and logistical support, and access to professional counseling or other forms of support as the Under Secretary considers appropriate for the betterment of the emotional and mental health and well-being of incident meteorologists and other employees of the Administration so long

as the need for such resources, training, access, or support is due to the response of such employees to high-impact and extreme fire weather events.

SEC. 707. EMERGENCY RESPONSE ACTIVITIES.

(a) DEFINITIONS.—In this section:

(1) BASIC PAY.—The term ''basic pay'' includes any applicable locality-based comparability payment under section 5304 of title 5, United States Code, any applicable special rate supplement under section 5305 of such title, or any equivalent payment under a similar provision of law.

(2) COVERED EMPLOYEE.—The term ''covered employee'' means an employee of the Department of Commerce, the Department of Agriculture, or the Department of the Interior.

(3) COVERED SERVICES.—The term ''covered services'' means services that are performed by a covered employee while serving—

(A) as a wildland firefighter or a fire management response official, including a regional fire director, a deputy regional fire director, and a fire management officer;

(B) as an incident meteorologist accompanying a wildland firefighter crew; or

(C) on an incident management team, at the National Interagency Fire Center, at a Geographic Area Coordinating Center, or at an operations center.

(4) PREMIUM PAY.—The term ''premium pay'' means premium pay paid under a provision of law described in the matter preceding paragraph (1) of section 5547(a) of title 5, United States Code.

(5) RELEVANT CONGRESSIONAL COMMITTEES.—The term ''relevant congressional committees'' means—

(A) the Committee on Oversight and Government Reform of the House of Representatives;

(B) the Committee on Natural Resources of the House of Representatives;

(C) the Committee on Science, Space, and Technology of the House of Representatives;

(D) the Committee on Agriculture of the House of Representatives;

(E) the Committee on Appropriations of the House of Representatives;

(F) the Committee on Commerce, Science, and Transportation of the Senate;

(G) the Committee on Homeland Security and Governmental Affairs of the Senate;

(H) the Committee on Agriculture, Nutrition, and Forestry of the Senate;

(I) the Committee on Appropriations of the Senate; and

(J) the Committee on Energy and Natural Resources of the Senate.

(6) SECRETARY CONCERNED.—The term ''Secretary concerned'' means—

(A) the Secretary of Commerce, with respect to an employee of the Department of Commerce;

(B) the Secretary of Agriculture, with respect to an employee of the Department of Agriculture; and

(C) the Secretary of the Interior, with respect to an employee of the Department of the Interior.

(b) WAIVER.—

(1) IN GENERAL.—Any premium pay received by a covered employee for covered services shall be disregarded in calculating the aggregate of the basic pay and premium pay for the covered employee for

purposes of applying the limitation on premium pay under section 5547(a) of title 5, United States Code.

(2) CALCULATION OF AGGREGATE PAY.—Any pay that is disregarded under paragraph (1) shall be disregarded in calculating the aggregate pay of the applicable covered employee for purposes of applying the limitation under section 5307 of title 5, United States Code, during calendar year 2027.

(3) LIMITATION.—A covered employee may not be paid premium pay under this subsection if, or to the extent that, the aggregate of the basic pay and premium pay (including premium pay for covered services) of the covered employee for a calendar year would exceed the rate of basic pay payable for a position at level II of the Executive Schedule under section 5313 of title 5, United States Code, as in effect at the end of that calendar year.

(4) TREATMENT OF ADDITIONAL PREMIUM PAY.—If the application of this subsection results in the payment of additional premium pay to a covered employee of a type that is normally creditable as basic pay for retirement or any other purpose, that additional premium pay shall not be—

(A) considered to be basic pay of the covered employee for any purpose; or

(B) used in computing a lump-sum payment to the covered employee for accumulated and accrued annual leave under section 5551 or 5552 of title 5, United States Code.

(5) EFFECTIVE PERIOD.—This subsection shall be in effect during calendar year 2027 and apply to premium pay payable during that year.

(c) AMENDMENT.—Section 5542(a)(5) of title 5, United States Code, is amended by inserting ", the Department of Commerce," after "Interior".

(d) PLAN TO ADDRESS NEEDS.—

(1) DEVELOPMENT AND IMPLEMENTATION.—Not later than March 30, 2027, the Secretaries referred to in subsection (a)(6), in consultation with the Director of the Office of Management and Budget and the Director of the Office of Personnel Management, shall jointly develop and implement a plan that addresses the needs of the Department of Commerce, the Department of Agriculture, and the Department of the Interior, as applicable, to hire, appoint, promote, or train additional covered employees who carry out covered services such that sufficient covered employees are available throughout each fiscal year, beginning in fiscal year 2027, without the need for waivers of premium pay limitations.

(2) SUBMITTAL.—Not later than 30 days before the date on which the Secretaries implement the plan developed under paragraph (1), the Secretaries shall submit the plan to the relevant congressional committees.

(3) LIMITATION.—The plan developed under paragraph (1) shall not be contingent on any Secretary receiving amounts appropriated for fiscal years beginning in fiscal year 2027 in amounts greater than amounts appropriated for fiscal year 2024.

(e) POLICIES AND PROCEDURES FOR HEALTH, SAFETY, AND WELL-BEING.—The Secretary concerned shall maintain policies and procedures to promote the health, safety, and well-being of covered employees.

SEC. 708. SUBMISSIONS TO CONGRESS REGARDING THE FIRE WEATHER SERVICES PROGRAM, INCIDENT METEOROLOGIST WORKFORCE NEEDS, AND NATIONAL WEATHER SERVICE WORKFORCE SUPPORT.

(a) REPORT TO CONGRESS.—Not later than 18 months after the date of the enactment of this Act, the Under Secretary shall submit to the appropriate committees of Congress—

(1) the plan described in subsection (b);

(2) the assessment described in subsection (c); and

(3) the assessment described in subsection (d).

(b) FIRE WEATHER SERVICES PROGRAM PLAN.—

(1) ELEMENTS.—The plan submitted under subsection (a)(1) shall detail—

(A) the observational data, modeling requirements, ongoing computational needs, research, development, and technology transfer activities, data management, skilled-personnel requirements, engagement with relevant Federal emergency and land management agencies and partners, and corresponding research, development, and operational resources and timelines necessary to achieve the functions described in subsection (b) of section 702 and the priorities described in subsection (c) of such section; and

(B) plans and needs for all other activities and requirements under this title and the amendments made by this title.

(2) SUBMITTAL OF ANNUAL BUDGET FOR PLAN.—Following completion of the plan submitted under subsection (a)(1), the Under Secretary shall, not less frequently than once each year concurrent with the submission of the budget by the President

to Congress under section 1105 of title 31, United States Code, submit to Congress a proposed budget corresponding with the elements detailed in the plan.

(c) INCIDENT METEOROLOGIST WORKFORCE NEEDS ASSESSMENT.—

(1) IN GENERAL.—The Under Secretary shall conduct a workforce needs assessment on the current and future demand for additional incident meteorologists for wildfires and other high-impact fire weather events.

(2) ELEMENTS.—The assessment required by paragraph (1) shall include the following:

(A) A description of staffing levels as of the date on which the assessment is submitted under subsection (a)(2) and projected future staffing levels.

(B) An assessment of the state of the research, development, and operational infrastructure of the National Weather Service as of the date on which the assessment is submitted and future needs of such infrastructure in order to meet current and future demands, including with respect to information technology support and logistical and administrative operations.

(3) CONSIDERATIONS.—In conducting the assessment required by paragraph (1), the Under Secretary shall consider user needs and feedback from relevant stakeholders.

(d) SUPPORT SERVICES ASSESSMENT.—

(1) IN GENERAL.—The Under Secretary shall conduct a workforce support services assessment with respect to employees of the National Weather Service engaged in emergency response.

(2) ELEMENTS.—The assessment required by paragraph (1) shall include the following:

(A) An assessment of the need for services provided by the Public Health Service to support the employees of the National Weather Service engaged in emergency response.

(B) A detailed assessment of appropriations required to secure the level of support services needed as identified in the assessment described in subparagraph (A).

(3) ADDITIONAL SUPPORT SERVICES.—Following the completion of the assessment required by paragraph (1), the Under Secretary shall seek to acquire additional support services to meet the needs identified in the assessment.

SEC. 709. FIRE WEATHER SCIENCE AND TECHNOLOGY WORKING GROUP; STRATEGIC PLAN.

(a) FIRE WEATHER SCIENCE AND TECHNOLOGY WORKING GROUP.—

(1) ESTABLISHMENT.—Not later than 90 days after the date of the enactment of this Act, the Director of the Office of Science and Technology Policy shall establish a working group, to be known as the ''Fire Weather Science and Technology Working Group'' (in this section referred to as the ''Working Group'').

(2) CHAIR.—The Working Group shall be chaired by the Under Secretary, or designee.

(3) GENERAL DUTIES.—

(A) IN GENERAL.—The Working Group shall seek to build efficiencies among the agencies listed under section 711(c)(1) and coordinate the planning and management of science, research, technology, and operations related to science and support services for wildland fire prediction, detection, forecasting, modeling, resilience, response, management, and assessments.

(B) INPUT.—The Working Group shall solicit input from non-Federal stakeholders.

(b) STRATEGIC PLAN.—

(1) IN GENERAL.—Not later than 18 months after the date of the enactment of this Act, the Working Group shall prepare and submit to Congress a strategic plan for interagency coordination, research, and development that will improve the assessment of fire environments and the understanding and prediction of wildland fires, associated wildfire smoke, and the impacts of such fires and smoke, including—

(A) on communities, buildings, and other infrastructure;

(B) on ecosystem services and watersheds;

(C) social and economic impacts;

(D) by developing and encouraging the adoption of science-based and cost-effective measures—

(i) to enhance community resilience to wildland fires;

(ii) to address and mitigate the impacts of wildland fires and associated wildfire smoke; and

(iii) to restore natural fire regimes in fire-dependent ecosystems;

(E) by improving the understanding and mitigation of the effects of weather and long-

term drought on wildland fire risk, frequency, and severity;

(F) through integration of social and behavioral sciences in public safety fire communication;

(G) by improving the forecasting and understanding of prescribed fires and the impacts of such fires, and how those impacts may differ from impacts of wildland fires that originate from an unplanned ignition; and

(H) consideration and adoption of any recommendations included in the report required by section 711(c).

(2) PLAN ELEMENTS.—The strategic plan required by paragraph (1) shall include the following:

(A) A description of the priorities and needs of vulnerable populations.

(B) A description of high-performance computing, visualization, and dissemination needs.

(C) A timeline and guidance for implementation of—

(i) an interagency data sharing system for data relevant to performing fire

assessments and modeling fire risk and fire behavior;

(ii) a system for ensuring that the fire prediction models of relevant agencies can be interconnected; and

(iii) to the maximum extent practicable, any recommendations included in the report required by section 711(c).

(D) A plan for incorporating and coordinating research and operational observations, including from infrared technologies, microwave, radars, satellites, mobile weather stations, and uncrewed aerial systems.

(E) A flexible framework to communicate clear and simple fire event information to the public.

(F) Integration of social, behavioral, risk, and communication research to improve the fire operational environment and societal information reception and response.

(c) SUNSET.—The Working Group shall terminate following the submission of the plan under subsection (b).

SEC. 710. FIRE WEATHER RATING SYSTEM.

(a) IN GENERAL.—The Under Secretary shall, in collaboration with the Chief of the United States Forest

Service, the Director of the United States Geological Survey, the Director of the National Park Service, the Administrator of the Federal Emergency Management Agency, the Director of the United States Fish and Wildlife Service, the Director of the Bureau of Indian Affairs, the Director of the Bureau of Land Management, and such Federal departments and agencies and stakeholders as the Under Secretary considers appropriate—

(1) evaluate the system used as of the date of the enactment of this Act to rate the risk of wildfire; and

(2) determine whether updates to that system are required to ensure that the ratings accurately reflect the severity of fire risk.

(b) UPDATE REQUIRED.—If the Under Secretary determines under subsection (a) that updates to the system described in paragraph (1) of such subsection are necessary, the Under Secretary shall update that system.

SEC. 711. GOVERNMENT ACCOUNTABILITY OFFICE REPORTS.

(a) REPORT ON FIRE WEATHER SERVICES PROGRAM.—

(1) IN GENERAL.—Not later than 2 years after the date of the establishment of the program under section 702(a), the Comptroller General of the

United States shall submit to Congress a report on such program.

(2) ELEMENTS.—The report required by paragraph (1) shall—

(A) evaluate the performance of the program by establishing initial baseline capabilities and tracking progress made toward fully operationalizing the functions described in section 702(b); and

(B) include such other recommendations as the Comptroller General determines are appropriate to improve the program.

(b) REPORT ON INTERAGENCY BODIES FOR WILDFIRE FORECASTING, PREVENTION, PLANNING, AND MANAGEMENT.—Not later than 1 year after the date of the enactment of this Act, the Comptroller General of the United States shall submit to Congress a report that—

(1) identifies all Federal interagency bodies established for the purpose of wildfire forecasting, prevention, planning, and management (such as wildfire councils, commissions, and workgroups), including—

(A) the Wildland Fire Leadership Council;

(B) the White House Wildfire Resilience Interagency Group;

(C) the Wildland Fire Management Policy Committee;

(D) the Wildland Fire Mitigation and Management Commission;

(E) the Joint Fire Science Program;

(F) the National Interagency Coordination Center;

(G) the National Predictive Services Oversight Group;

(H) the Interagency Council for Advancing Meteorological Services;

(I) the National Wildfire Coordinating Group;

(J) the National Multi-Agency Coordinating Group; and

(K) the Mitigation Framework Leadership Group;

(2) evaluates the roles, functionality, and utility of such interagency bodies;

(3) evaluates the progress, performance, and implementation of such interagency bodies;

(4) assesses efficacy and identifies potential overlap and duplication of such interagency bodies in carrying out interagency collaboration with respect

to wildfire prevention, planning, and management; and

(5) includes such other recommendations as the Comptroller General determines are appropriate to streamline and improve wildfire forecasting, prevention, planning, and management, including recommendations regarding the interagency bodies for which the addition of the Administration is necessary to improve wildfire forecasting, prevention, planning, and management.

(c) REPORT ON INTERAGENCY COORDINATION.—Not later than 1 year after the date of the enactment of this Act, the Comptroller General of the United States shall submit to Congress a report that identifies—

(1) the authorities, roles, and science and support services relating to wildland fire prediction, detection, forecasting, modeling, resilience, response, management, and assessment provided by—

(A) the Department of Commerce, including the Administration and the National Institute of Standards and Technology;

(B) the National Aeronautics and Space Administration;

(C) the Department of the Interior;

(D) the Department of Agriculture;

(E) the National Science Foundation;

(F) the Department of Energy;

(G) the Federal Emergency Management Agency;

(H) the Department of Transportation;

(I) the Environmental Protection Agency; and

(J) the Department of Defense; and

(2) recommended areas in and mechanisms by which the agencies listed under paragraph (1) could support and improve—

(A) coordination between Federal departments and agencies, State and local governments, Indian tribes, Tribal organizations, Native Hawaiian organizations, and other relevant stakeholders, including through examination of possible public-private partnerships;

(B) research and development, including interdisciplinary research, related to fire environments, wildland fires, associated wildfire smoke, and the impacts of such environments, fires, and smoke, in furtherance of a coordinated interagency effort to address wildland fire risk reduction;

(C) data management and stewardship, the development and coordination of data systems and computational tools, and the creation of a centralized, integrated data collaboration environment for agency data, including historical data, relating to weather, fire environments, wildland fires, associated wildfire smoke, and the impacts of such environments, fires, and smoke, and the assessment of wildland fire risk mitigation measures;

(D) interoperability, usability, and accessibility of the scientific data, data systems, and computational and information tools of the agencies listed under paragraph (1);

(E) coordinated public safety communications relating to fire weather events, fire hazards, and wildland fire and smoke risk reduction strategies; and

(F) secure and accurate real-time data, alerts, and advisories to wildland firefighters and other decision support tools for wildland fire incident command posts.

(d) REPORT ON AUTOMATED SURFACE OBSERVING SYSTEM.—Not later than 4 years after the date of the

enactment of this Act, the Comptroller General of the United States shall submit to Congress a report that—

(1) evaluates the functionality, utility, reliability, and operational status of the automated surface observing system across the Administration, the Federal Aviation Administration, and the Department of Defense;

(2) evaluates the progress, performance, and implementation of the plan required by section 705(b)(1)(B);

(3) assesses the efficacy of cross-agency collaboration and stakeholder engagement in carrying out the plan and provides recommendations to improve such activities;

(4) evaluates the operational continuity and reliability of the system, particularly in remote and rural areas and areas where system failure would have the greatest negative impact to the community, and provides recommendations to improve such continuity and reliability;

(5) assesses Federal coordination regarding the remote automatic weather station network, air resource advisors, and other Federal observing assets used for weather and subseasonal to seasonal mod-

eling and response activities, and provides recommendations for improvements; and

(6) includes such other recommendations as the Comptroller General determines are appropriate to improve the system.

SEC. 712. COOPERATION AND COORDINATION.

(a) COOPERATION.—Each Federal department and agency shall cooperate with the Under Secretary, as appropriate, in carrying out this title and the amendments made by this title.

(b) COORDINATION.—

(1) IN GENERAL.—In meeting the requirements under this title and the amendments made by this title, the Under Secretary shall coordinate, and as appropriate, establish agreements with Federal and external partners to fully use and leverage existing assets, systems, networks, technologies, and sources of data.

(2) INCLUSIONS.—Coordination carried out under paragraph (1) shall include coordination with—

(A) the agencies represented at the National Interagency Fire Center;

(B) the Predictive Services Program of the National Interagency Coordination Center;

(C) the National Wildfire Coordinating Group; and

(D) relevant interagency bodies identified in the report required by section 711(b).

(3) CONSULTATION.—In carrying out this subsection, the Under Secretary shall consult with Federal partners including—

(A) the National Aeronautics and Space Administration;

(B) the Department of the Interior;

(C) the Federal Emergency Management Agency;

(D) the National Science Foundation;

(E) the United States Geological Survey;

(F) the Department of Agriculture;

(G) the Environmental Protection Agency;

(H) the Department of Energy;

(I) the Department of Defense;

(J) the National Institute of Standards and Technology; and

(K) such other departments and agencies as the Under Secretary considers relevant.

(c) PROCESS FOR ANNUAL COORDINATION WITH NON-FEDERAL ENTITIES.—Not later than 18 months after the date of the enactment of this Act, the Under

Secretary shall develop and submit to the appropriate committees of Congress a process for annual coordination with State and local governments, Indian tribes, Tribal organizations, and Native Hawaiian organizations to assist the development of improved fire weather products and services.

(d) INTERNATIONAL COORDINATION.—

(1) IN GENERAL.—The Under Secretary may develop collaborative relationships and agreements with foreign partners and counterparts to address transboundary issues pertaining to wildfires, fire weather, wildfire smoke, air quality, and associated conditions and hazards or other relevant meteorological phenomena, as appropriate, to facilitate full and open exchange of data and information.

(2) CONSULTATION.—In carrying out activities under this subsection, the Under Secretary shall consult with the Department of State and such other Federal partners as the Under Secretary considers appropriate.

SEC. 713. GENERAL PROVISIONS.

(a) AVOIDANCE OF DUPLICATION.—

(1) IN GENERAL.—The Under Secretary shall ensure, to the greatest extent practicable, that activities carried out under this title and the amend-

ments made by this title are not duplicative of activities supported by other parts of the Administration or other relevant Federal departments and agencies.

(2) COORDINATION.—In carrying out activities under this title and the amendments made by this title, the Under Secretary shall coordinate with the Administration and heads of other Federal research agencies—

(A) to ensure those activities enhance and complement, but do not constitute unnecessary duplication of, efforts; and

(B) to ensure the responsible stewardship of funds.

(b) RULE OF CONSTRUCTION.—Nothing in this title may be construed—

(1) to satisfy any requirement for government-to-government consultation with Indian tribes; or

(2) to affect or modify any treaty or other right of any Indian tribe.

SEC. 714. AUTHORIZATION OF APPROPRIATIONS.

(a) IN GENERAL.—There are authorized to be appropriated to the Administration to carry out this title and the amendments made by this title—

(1) $15,000,000 for fiscal year 2027;

(2) $20,000,000 for fiscal year 2028;

(3) $27,000,000 for fiscal year 2029;

(4) $36,000,000 for fiscal year 2030; and

(5) $50,000,000 for fiscal year 2031.

(b) PROHIBITION.—None of the amounts authorized to be appropriated by subsection (a) may be used to unnecessarily duplicate activities, as determined by the Under Secretary, funded under title VIII of division D of the Infrastructure Investment and Jobs Act (Public Law 117–58; 135 Stat. 1094).

TITLE VIII—PRECIPITATION ESTIMATES AND LANDSLIDE PREPAREDNESS

SEC. 801. INCLUSION OF ATMOSPHERIC RIVERS AND EXTREME PRECIPITATION EVENTS IN ESTIMATES OF PRECIPITATION FREQUENCY.

(a) DEFINITIONS.—Section 12(a) of the Flood Level Observation, Operations, and Decision Support Act (15 U.S.C. 9707(a)) is amended—

(1) by redesignating paragraphs (1) and (2) as paragraphs (3) and (4), respectively; and

(2) by inserting before paragraph (3) (as so redesignated) the following:

"(1) ATMOSPHERIC RIVER.—The term 'atmospheric river' means a transient corridor of strong water vapor in the atmosphere that—

''(A) produces significant quantities of rain or snow; and

''(B) may be primarily beneficial to the water supply or hazardous due to flooding.

''(2) ATMOSPHERIC RIVER FLOODING EVENT.—The term 'atmospheric river flooding event' means an atmospheric river that—

''(A) results in flooding of rivers and streams or other hazards to human life, property, or the economy; and

''(B) is of particular concern to human health, property, and the economy, as determined by the Secretary of Commerce.''.

(b) REQUIREMENTS.—Section 12(d)(1) of the Flood Level Observation, Operations, and Decision Support Act (15 U.S.C. 9707(d)(1)) is amended by inserting '', such as precipitation resulting from hurricanes, atmospheric river flooding events, and other precipitation events'' before the period at the end.

SEC. 802. REAUTHORIZATION OF NATIONAL LANDSLIDE PREPAREDNESS ACT.

(a) DEFINITIONS.—Section 2 of the National Landslide Preparedness Act (43 U.S.C. 3101) is amended—

(1) by redesignating paragraphs (4) through (11) as paragraphs (6), (7), (9), (10), (12), (13), (14), and (15), respectively;

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

''(4) ATMOSPHERIC RIVER.—The term 'atmospheric river' has the meaning given the term in section 12(a) of the Flood Level Observation, Operations, and Decision Support Act (15 U.S.C. 9707(a)).

''(5) ATMOSPHERIC RIVER FLOODING EVENT.—The term 'atmospheric river flooding event' has the meaning given the term in section 12(a) of the Flood Level Observation, Operations, and Decision Support Act (15 U.S.C. 9707(a)).'';

(3) by inserting after paragraph (7) (as so redesignated) the following:

''(8) INSTITUTION OF HIGHER EDUCATION.—The term 'institution of higher education' has the meaning given the term in section 101(a) of the Higher Education Act of 1965 (20 U.S.C. 1001(a)).'';

(4) by inserting after paragraph (10) (as so redesignated) the following:

"(11) NATIVE HAWAIIAN ORGANIZATION.—The term 'Native Hawaiian organization' has the meaning given the term in section 6207 of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 7517), except that the term includes the Department of Hawaiian Home Lands and the Office of Hawaiian Affairs."; and

(5) by adding at the end the following:

"(16) TRIBAL ORGANIZATION.—The term 'Tribal organization' has the meaning given the term in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 5304).".

(b) NATIONAL LANDSLIDE HAZARDS REDUCTION PROGRAM.—

(1) ESTABLISHMENT.—Section 3(a)(3) of the National Landslide Preparedness Act (43 U.S.C. 3102(a)(3)) is amended by striking "protect" and inserting "contribute to protecting".

(2) PROGRAM ACTIVITIES.—Section 3(b)(1)(C)(ii) of the National Landslide Preparedness Act (43 U.S.C. 3102(b)(1)(C)(ii)) is amended by striking "implement" and inserting "disseminate".

(3) NATIONAL STRATEGY.—Section 3(b)(2) of the National Landslide Preparedness Act (43 U.S.C. 3102(b)(2)) is amended—

(A) by redesignating subparagraphs (A) through (C) as clauses (i) through (iii), respectively, and indenting appropriately;

(B) in the matter preceding clause (i) (as so redesignated), by striking ''Not later than'' and inserting the following:

''(A) IN GENERAL.—Not later than''; and

(C) by adding at the end the following:

''(B) ASSESSMENT.—For purposes of the first national strategy published after the date of enactment of the Weather Research and Forecasting Innovation Reauthorization Act of 2026 under subparagraph (A), the Secretary, in consultation with the Secretary of Commerce, shall include an assessment of the risks that meteorological conditions, such as atmospheric river flooding events, pose to the safety of life and property in the United States with respect to landslide hazards.''.

(4) NATIONAL LANDSLIDE HAZARDS DATABASE.—Section 3(b)(3) of the National Landslide

Preparedness Act (43 U.S.C. 3102(b)(3)) is amended—

(A) by redesignating subparagraphs (C) and (D) as subparagraphs (D) and (E), respectively; and

(B) by inserting after subparagraph (B) the following:

''(C) the identification of areas in need of additional hazard risk assessment, including areas that may be at risk due to—

''(i) hydrology or changes in hydrology that may include erosion, drought, or other characteristics that could impact landslide risk;

''(ii) meteorological conditions, such as atmospheric river flooding events;

''(iii) geologic activity, such as volcanic eruptions, earthquakes, or tsunamis; or

''(iv) data-poor areas or hazards with poor monitoring that could contribute to increased landslide risk;''.

(5) LANDSLIDE HAZARD AND RISK PREPAREDNESS FOR COMMUNITIES.—Section 3(b)(4) of the

National Landslide Preparedness Act (43 U.S.C. 3102(b)(4)) is amended—

(A) in the matter preceding subparagraph (A), by inserting ''Native Hawaiian organizations and other stakeholders, as appropriate,'' before ''and Indian tribes'';

(B) in subparagraph (A)—

(i) in the matter preceding clause (i), by striking ''local, and Tribal governments and decisionmakers'' and inserting ''and local governments, Indian tribes, Tribal organizations, Native Hawaiian organizations, and other decisionmakers'';

(ii) by striking clause (iii) and inserting the following:

''(iii) health and safety with respect to landslides;'';

(iii) by redesignating clause (iv) as clause (v); and

(iv) by inserting after clause (iii) the following:

''(iv) reducing losses from landslides, including the threats caused by meteorological conditions, such as atmospheric rivers; and''; and

(C) in subparagraph (B)—

(i) in clause (i), by striking ''local, and Tribal officials'' and inserting ''and local officials, Indian tribes, Tribal organizations, and Native Hawaiian organizations''; and

(ii) in clause (ii), by striking ''local, and Tribal emergency managers'' and inserting ''and local emergency managers and emergency managers of Indian tribes, Tribal organizations, and Native Hawaiian organizations''.

(6) DEBRIS FLOW EARLY WARNING SYSTEM.—Section 3(b)(5) of the National Landslide Preparedness Act (43 U.S.C. 3102(b)(5)) is amended—

(A) in subparagraph (B), by striking ''State, territorial, local, and Tribal governments'' and inserting ''State, territorial, and local governments, Indian tribes, Tribal organizations, and Native Hawaiian organizations'';

(B) by redesignating subparagraphs (A) through (C) as clauses (i) through (iii), respectively, and indenting appropriately;

(C) in the matter preceding clause (i) (as so redesignated), by striking ''In carrying out'' and inserting the following:

''(A) IN GENERAL.—In carrying out''; and

(D) by adding at the end the following:

''(B) CONSULTATION.—In carrying out subparagraph (A), the Secretary may consult with an institution of higher education described in subsection (d)(2)(B)(iv) and other stakeholders to establish and support emergency response procedures, as appropriate.''.

(7) EMERGENCY RESPONSE ACTIVITIES.—Section 3(b)(6) of the National Landslide Preparedness Act (43 U.S.C. 3102(b)(6)) is amended—

(A) by redesignating subparagraphs (A) through (C) as clauses (i) through (iii), respectively, and indenting appropriately;

(B) in the matter preceding clause (i) (as so redesignated), by striking ''In carrying'' and inserting the following:

''(A) IN GENERAL.—In carrying'';

(C) in subparagraph (A) (as so designated)—

(i) in the matter preceding clause (i) (as so redesignated), by inserting ''Native

Hawaiian organizations,'' before ''and Indian tribes'';

(ii) in clause (ii) (as so redesignated), by striking ''and'' at the end;

(iii) in clause (iii) (as so redesignated), by striking the period at the end and inserting ''; and''; and

(iv) by adding at the end the following:

''(iv) to improve real-time risk management during landslide events, including with respect to landslide events caused by—

''(I) hydrology or changes in hydrology that may include erosion, drought, or other characteristics that could impact landslide risk;

''(II) meteorological conditions, such as atmospheric river flooding events;

''(III) geologic activity, such as volcanic eruptions, earthquakes, or tsunamis;

''(IV) data-poor areas or hazards with poor monitoring that could contribute to increased landslide risk; or

''(V) thawing permafrost and glacial retreat causing destabilization of slopes.''; and

(D) by adding at the end the following:

''(B) CONSULTATION.—In carrying out subparagraph (A), the Secretary may consult with an institution of higher education described in subsection (d)(2)(B)(iv) and the private sector.''.

(8) ADVISORY COMMITTEE.—Section 3(d)(2)(B) of the National Landslide Preparedness Act (43 U.S.C. 3102(d)(2)(B)) is amended—

(A) in clause (iii), by striking ''geological''; and

(B) in clause (vi), by striking ''local, and Tribal emergency management agencies'' and inserting ''and local emergency management agencies and emergency management agencies of Indian tribes and Native Hawaiian organizations''.

(9) REGIONAL PARTNERSHIPS.—Section 3 of the National Landslide Preparedness Act (43 U.S.C. 3102) is amended—

(A) by striking subsection (i);

(B) by redesignating subsections (e) through (h) as subsections (f) through (i), respectively; and

(C) by inserting after subsection (d) the following:

''(e) REGIONAL PARTNERSHIPS.—

''(1) IN GENERAL.—As soon as practicable after the date of the enactment of the Weather Research and Forecasting Innovation Reauthorization Act of 2026, the Secretary shall establish, in each region in which the Secretary determines that there is a high landslide hazard, a regional partnership with an eligible partner described in paragraph (2).

''(2) ELIGIBLE PARTNERS.—An organization or institution of higher education with expertise in landslide mapping, research, and monitoring shall be eligible for a regional partnership under paragraph (1).

''(3) PURPOSES AND DUTIES.—A regional partnership established under paragraph (1) shall—

''(A) allow the Secretary to leverage applicable expertise in regional organizations;

''(B) coordinate long-term landslide research specific to the applicable region; and

''(C) align interagency landslide monitoring efforts.''.

(10) GRANT PROGRAMS.—Section 3 of the National Landslide Preparedness Act (43 U.S.C. 3102) is amended, in paragraph (1) of subsection (f) (as redesignated by paragraph (9)(A))—

(A) in subparagraph (A)(i), by striking ''local, and Tribal governments to research, map, assess'' and inserting ''and local governments, Indian tribes, Tribal organizations, and Native Hawaiian organizations to research, map, assess, monitor'';

(B) in subparagraph (B)—

(i) in clause (i), by inserting ''institutions of higher education described in subsection (d)(2)(B)(iv),'' before ''and Indian tribes''; and

(ii) in clause (ii)—

(I) by redesignating subclauses (II) through (IV) as subclauses (III) through (V), respectively; and

(II) by inserting after subclause (I) the following:

"(II) in regions that have recently experienced loss of life due to landslides;"; and

(C) in subparagraph (C)—

(i) in clause (i), by inserting "awarded" after "grants"; and

(ii) in clause (ii), by striking "made" and inserting "or other accomplishments resulting".

(11) SIGNIFICANT EVENTS.—Section 3 of the National Landslide Preparedness Act (43 U.S.C. 3102) is amended, in subsection (h)(3) (as so redesignated), by striking "local, and Tribal partners" and inserting "and local partners, Indian tribes, Tribal organizations, and Native Hawaiian organizations".

(12) FUNDING.—Section 3 of the National Landslide Preparedness Act (43 U.S.C. 3102) is amended, in subsection (i) (as redesignated by paragraph (9)(A))—

(A) in the matter preceding paragraph (1), by striking "2024" and inserting "2031"; and

(B) in paragraph (1), by striking ''$25,000,000 to carry out this section'' and inserting ''$35,000,000 to carry out this section, of which not less than $10,000,000 shall be for the purchase, deployment, and repair of landslide early warning systems in high-risk areas''.

(13) DEFICIT REDUCTION.—Section 3 of the National Landslide Preparedness Act (43 U.S.C. 3102), as so amended, is further amended by adding at the end the following:

''(j) FUNDING; DEFICIT REDUCTION.—

''(1) FUNDING.—Funds used by an agency to carry out this section may, as provided in advance in appropriations Acts, only come from amounts authorized to be appropriated to that agency.

''(2) DEFICIT REDUCTION.—Any amount appropriated to an account of a Federal department or agency for the Federal department or agency to carry out a responsibility under this section that is cancelled pursuant to section 1552(a) of title 31, United States Code, shall be transferred to the general fund of the Treasury and be applied to deficit reduction.''.

(c) 3D ELEVATION PROGRAM.—

(1) ESTABLISHMENT.—Section 5(a) of the National Landslide Preparedness Act (43 U.S.C. 3104(a)) is amended—

(A) in paragraph (1)(A), by inserting ''and derivative'' after ''3D elevation''; and

(B) in paragraph (2)(B)(i), by inserting '', process, and integrate'' after ''acquire''.

(2) 3D ELEVATION FEDERAL INTERAGENCY COORDINATING COMMITTEE.—Section 5(b)(3) of the National Landslide Preparedness Act (43 U.S.C. 3104(b)(3)) is amended—

(A) by redesignating subparagraphs (D) and (E) as subparagraphs (E) and (F), respectively; and

(B) by inserting after subparagraph (C) the following:

''(D) the 3D Hydrography Program Working Group;''.

(3) GRANTS AND COOPERATIVE AGREEMENTS.—Section 5(d)(3) of the National Landslide Preparedness Act (43 U.S.C. 3104(d)(3)) is amended by striking ''publically'' and inserting ''publicly''.

(4) FUNDING.—Section 5(e) of the National Landslide Preparedness Act (43 U.S.C. 3104(e)) is amended by striking ''2024'' and inserting ''2031''.

SEC. 803. NEXT GENERATION WATER OBSERVING SYSTEM.

The Act of December 24, 1942 (56 Stat. 1086, chapter 822; 43 U.S.C. 36b), is amended—

(1) in the first section, by striking ''That the Secretary of the Interior'' and inserting the following:

''SECTION 1. GAGING STREAMS AND UNDERGROUND WATER RESOURCES.

''The Secretary of the Interior (referred to in this Act as the 'Secretary')'';

(2) in section 1 (as so designated)—

(A) in the second sentence, by striking ''of the Interior''; and

(B) in the proviso—

(i) by striking ''this Act'' each place it appears and inserting ''this section''; and

(ii) by striking ''of the Interior''; and

(3) by adding at the end the following:

''SEC. 2. NEXT GENERATION WATER OBSERVING SYSTEM.

''(a) ESTABLISHMENT.—The Secretary shall establish within the United States Geological Survey a system, to be known as the 'Next Generation Water Observing System' (referred to in this section as the 'System').

''(b) PURPOSE.—The purpose of the System is to provide real-time data on water quantity and quality—

''(1) that, as compared to previous systems, is more affordable, more rapid, and available in more locations; and

''(2) that support advanced modeling tools—

''(A) to provide state-of-the-art flood and drought forecasts;

''(B) to inform emergency- and water-management decision support systems; and

''(C) to help evaluate—

''(i) the near-term and long-term risks of floods and droughts, including any scenarios that modify those risks;

''(ii) the quantity of water stored in seasonal snow packs, and how changes in seasonal snow packs affect water supplies;

''(iii) the early stages of drought;

''(iv) the predicted timelines for drought recovery;

''(v) the quantity of water lost to evapotranspiration;

''(vi) water quality differences during wet and dry periods;

''(vii) the effects of streamflow on groundwater;

''(viii) the effects of groundwater on streamflow; and

''(ix) ice and water volume stored in glaciers and changing water volumes due to glacial retreat.

''(c) SYSTEM REQUIREMENTS.—The System shall provide for—

''(1) state-of-the-art measurements;

''(2) a dense array of sensors at selected sites;

''(3) increased spatial and temporal coverage;

''(4) new technology testing and implementation;

''(5) improved operational efficiency; and

''(6) modernized and timely data storage and delivery.

''(d) PRIORITY REGIONS.—In determining in which regions of the United States Geological Survey to carry out the System, the Secretary shall give priority to regions of the United States Geological Survey in which there is—

''(1) a high level of drought;

''(2) a reliance on reservoirs for water storage;

''(3) a reliance on hydrologic storage, including groundwater, aquifers, and snowpack; and

''(4) flooding and heavy rainfall.

''(e) COORDINATION.—In the implementation of this section, the System shall coordinate with the National Integrated Drought Information System as appropriate.

''(f) AUTHORIZATION OF APPROPRIATIONS.—

''(1) IN GENERAL.—There is authorized to be appropriated to carry out this section in 10 initial basins, as determined by the Secretary, $30,000,000 for fiscal year 2027, to remain available until expended.

''(2) DERIVATION OF FUNDS.—Funds used by an agency to carry out this section may, as provided in advance in appropriations Acts, only come from amounts authorized to be appropriated to that agency.''.

SEC. 804. WATER DATA ENHANCEMENT AND NATIONAL GROUNDWATER RESOURCES MONITORING BY UNITED STATES GEOLOGICAL SURVEY.

Section 9507 of the Omnibus Public Land Management Act of 2009 (42 U.S.C. 10367) is amended—

(1) in subsection (a)—

(A) in paragraph (2)(C)—

(i) in clause (i), by striking ''and'' at the end;

(ii) in clause (ii), by inserting ''and'' after the semicolon at the end; and

(iii) by adding at the end the following:

''(iii) the conduct of groundwater quality assessments relating to permafrost thaw and changes in precipitation rates;'';

(B) in paragraph (4)—

(i) in subparagraph (A)—

(I) in the matter preceding clause (i), by striking ''10 years'' and inserting ''13 years''; and

(II) in clause (i), by striking ''national streamflow information program'' and inserting ''Federal priority streamgage program'';

(ii) in subparagraph (B), by striking ''Federal Priority streamgage program'' and inserting ''Federal Priority Streamgage Network''; and

(iii) by adding at the end the following:

''(C) PRIORITY SITES.—In selecting sites for the installation of streamgages under subparagraph (A), the Secretary shall give priority to regions of the United States Geological Survey in which there is—

"(i) a high level of drought;

"(ii) a reliance on reservoirs for water storage;

"(iii) a reliance on hydrologic storage, including groundwater, aquifers, and snowpack; and

"(iv) flooding and heavy rainfall.

"(D) NO IMPACT ON EXISTING SITES.—The priority provided under subparagraph (C) shall have no impact on any site or region in which a streamgage has been installed, and is operating, as of the date of enactment of the Weather Research and Forecasting Innovation Reauthorization Act of 2026, subject to the condition that the data from such a site or region are continuing to meet the priority needs of stakeholders, as determined by the Secretary."; and

(C) in paragraph (6)—

(i) in subparagraph (B), by striking "$10,000,000 for each of fiscal years 2009 through 2028" and inserting "$30,000,000 for each of fiscal years 2027 through 2034"; and

(ii) by adding at the end the following:

''(C) DERIVATION OF FUNDS.—Funds used by an agency to carry out this section may, as provided in advance in appropriations Acts, only come from amounts authorized to be appropriated to that agency.''; and

(2) in subsection (b)—

(A) in paragraph (2)—

(i) in subparagraph (B), in the matter preceding clause (i), by striking ''and State and local water resource agencies and Tribes'' and inserting '', State and local water resource agencies, Indian tribes, Tribal organizations, and Native Hawaiian organizations''; and

(ii) in subparagraph (C), by striking ''State water resource agency or Tribe'' and inserting ''State water resource agency, Indian tribe, Tribal organization, or Native Hawaiian organization'';

(B) in paragraph (6)—

(i) by striking ''give priority to those activities'' and inserting the following: ''give priority to—

''(A) activities'';

(ii) in subparagraph (A) (as so designated)—

(I) by striking ''State, a Tribe'' and inserting ''State, Indian tribe, Tribal organization, Native Hawaiian organization,''; and

(II) by striking the period at the end and inserting ''; and''; and

(iii) by adding at the end the following:

''(B) activities conducted in regions of the United States Geological Survey in which there is—

''(i) a high level of drought;

''(ii) a reliance on reservoirs for water storage;

''(iii) a reliance on hydrologic storage, including groundwater, aquifers, and snowpack; and

''(iv) flooding and heavy rainfall.''; and

(C) in paragraph (7)—

(i) by striking ''There are authorized to be appropriated'' and inserting the following:

''(A) IN GENERAL.—There is authorized to be appropriated''; and

(ii) by adding at the end the following:

''(B) DERIVATION OF FUNDS.—Funds used by an agency to carry out this section may, as provided in advance in appropriations Acts, only come from amounts authorized to be appropriated to that agency.''.

TITLE IX—IMPROVING CYBERSECURITY AND TELECOMMUNICATIONS FOR OCEANIC RESEARCH

SEC. 901. DEFINITIONS.

In this title:

(1) DIRECTOR.—The term ''Director'' means the Director of the National Science Foundation.

(2) OCEANOGRAPHIC RESEARCH VESSEL.—The term ''oceanographic research vessel'' has the meaning given the term in section 2101 of title 46, United States Code.

(3) U.S. ACADEMIC RESEARCH FLEET.—The term ''U.S. Academic Research Fleet'' means the United States flagged vessels that—

(A) have been accepted into, and are active participants administered within, the University-National Oceanographic Laboratory System;

(B) are operated as oceanographic research vessels by research universities and laboratories;

(C) receive funding from the National Science Foundation; and

(D) have achieved designation as a member vessel of the fleet through a standard evaluation process.

SEC. 902. PLAN TO IMPROVE CYBERSECURITY AND TELECOMMUNICATIONS OF U.S. ACADEMIC RESEARCH FLEET.

(a) IN GENERAL.—Not later than 1 year after the date of enactment of this Act, the Director shall, in consultation with the head of any Federal department or agency, university, or laboratory that owns or operates a vessel of the U.S. Academic Research Fleet, 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 plan

to improve the cybersecurity and telecommunications of the U.S. Academic Research Fleet.

(b) ELEMENTS.—The plan required by subsection (a) shall include—

(1) an assessment of the telecommunications and networking needs of the U.S. Academic Research Fleet, consistent with the typical scientific missions of the vessels of such fleet;

(2) in consultation with the Cybersecurity and Infrastructure Security Agency and the National Institute of Standards and Technology, an assessment of cybersecurity needs appropriate for—

(A) the ownership of vessels within the U.S. Academic Research Fleet; and

(B) the scientific missions of such vessels;

(3) an assessment of the costs necessary to meet the needs described in paragraphs (1) and (2), including—

(A) any necessary equipment, such as satellite communications equipment, software, high-performance computing clusters shipboard and shoreside, or enterprise hardware; and

(B) estimated personnel costs in excess of current expenditures, including any necessary training, support, or logistics;

(4) an assessment of the time required to implement any upgrades required to meet the needs described in paragraphs (1) and (2) under varying budgets and funding scenarios;

(5) the adoption of common solutions or consortial licensing agreements, or the centralization of elements of fleet cybersecurity, telecommunications, or data management at a single facility; and

(6) in consultation with any non-Federal owners of a vessel of the U.S. Academic Research Fleet, a spending plan for the National Science Foundation, the Office of Naval Research, non-Federal owners of vessels of the U.S. Academic Research Fleet, users of the U.S. Academic Research Fleet, or any combination thereof, to provide funding to cover the costs described in paragraph (3).

(c) CONSIDERATIONS.—The Director shall, in preparing the plan required by subsection (a), consider—

(1) the network capabilities, including speed and bandwidth targets, necessary to meet the scientific mission needs of each class of vessels of the U.S. Academic Research Fleet for such purposes as—

(A) executing the critical functions and communications of the vessels;

(B) providing network access to conduct medical care via telemedicine or related crisis response care;

(C) as necessary to meet operations, uploading any scientific data to a shoreside server, including the copying of data off ship for disaster recovery or risk mitigation purposes;

(D) as appropriate, conducting real-time streaming to enable shore-based observers to participate in ship-based maintenance or research activities; and

(E) real-time coordinated viewing of—

(i) scientific instrumentation so that it is possible to conduct scientific surveys and seafloor mapping with fully remote subject-matter experts; and

(ii) critical operational technology by manufacturers and vendors so that it is possible to carry out maintenance and repairs to systems with limited expertise on the vessel, with fully remote subject-matter experts advising; and

(2) in consultation with the Director of the Cybersecurity and Infrastructure Security Agency, the

Director of the National Institute of Standards and Technology, and the heads of other Federal departments or agencies, as appropriate—

(A) the cybersecurity recommendations in the report of the private scientific advisory group known as JASON entitled ''Cybersecurity at NSF Major Facilities'' (JSR–21–10E) and dated October 2021 as applied to the U.S. Academic Research Fleet;

(B) standards and guidance for information security, including the use of encryption for sensitive information, the detection and handling of security incidents, and other areas determined relevant by the Director;

(C) facilitating access to cybersecurity personnel and training of research and support personnel; and

(D) the requirements for controlled unclassified or classified information.

TITLE X—INTEGRATED OCEAN OBSERVATION SYSTEM REAUTHORIZATION ACT OF 2026

SEC. 1001. SHORT TITLE.

This title may be cited as the ''Integrated Ocean Observation System Reauthorization Act of 2026''.

SEC. 1002. PURPOSES.

Section 12302 of the Integrated Coastal and Ocean Observation System Act of 2009 (33 U.S.C. 3601) is amended—

(1) in paragraph (1), in the matter preceding subparagraph (A)—

(A) by striking ''Council'' and inserting ''Ocean Policy Committee'';

(B) by striking ''and ocean observation'' and inserting '', ocean, and meteorological observations''; and

(C) by striking ''and coastal information'' and inserting '', coastal, and meteorological information''; and

(2) in paragraph (4)(A)—

(A) by inserting ''data management systems and cyber infrastructure,'' after ''data gaps,''; and

(B) by striking ''global climate change,''.

SEC. 1003. DEFINITIONS.

Section 12303 of the Integrated Coastal and Ocean Observation System Act of 2009 (33 U.S.C. 3602) is amended—

(1) by striking paragraph (2);

(2) by redesignating paragraphs (3), (4), and (5) as paragraphs (2), (3), and (4), respectively;

(3) in paragraph (2), as so redesignated, by striking ''Council'' and inserting ''Ocean Policy Committee'';

(4) by inserting after paragraph (4), as redesignated by paragraph (2), the following:

''(5) OCEAN POLICY COMMITTEE.—The term 'Ocean Policy Committee' means the Ocean Policy Committee established by section 8932 of title 10, United States Code.'';

(5) in paragraph (6), by inserting ''conduct operational oceanography measurements and'' after ''systems in order to'';

(6) by redesignating paragraphs (8) and (9) as paragraphs (9) and (10), respectively;

(7) by inserting after paragraph (7) the following:

''(8) STATE.—The term 'State' has the meaning given that term in section 3501 of title 40, United States Code.''; and

(8) in paragraph (10), as redesignated by paragraph (6), by striking ''Council'' and inserting ''Ocean Policy Committee''.

SEC. 1004. INTEGRATED COASTAL AND OCEAN OBSERVING SYSTEM.

Section 12304 of the Integrated Coastal and Ocean Observation System Act of 2009 (33 U.S.C. 3603) is amended—

(1) in subsection (b)(1)—

(A) in subparagraph (A), by striking ''national'' and inserting ''regional, national,'';

(B) in subparagraph (C), by inserting ''and ocean'' after ''weather''; and

(C) in subparagraph (E)—

(i) in clause (iv), by inserting ''and ocean'' after ''weather'' each place it appears; and

(ii) in clause (v), by inserting ''and ocean'' after ''weather'';

(2) in subsection (c)—

(A) in paragraph (1)—

(i) in the paragraph heading, by striking ''COUNCIL'' and inserting ''OCEAN POLICY COMMITTEE''; and

(ii) in the matter preceding subparagraph (A), by striking ''Council'' each place it appears and inserting ''Ocean Policy Committee'';

(B) in paragraph (2)—

(i) in subparagraph (A), by striking ''The Council'' and inserting ''The Ocean Policy Committee''; and

(ii) in subparagraph (B)—

(I) by redesignating clauses (vi) through (x) as clauses (vii) through (xi), respectively; and

(II) by inserting after clause (v) the following:

''(vi) develop requirements and processes for regional associations and federally funded projects of the agencies participating in the Interagency Ocean Observation Committee to collaborate with the regional coastal observing systems for data sharing at regional levels;''; and

(C) in paragraph (3)(C)—

(i) in clause (iii)(I), by inserting ''as operational entities'' after ''associations'';

(ii) in clause (x), by inserting '', cyber infrastructure,'' after ''data management''; and

(iii) in clause (xiii)—

(I) by inserting ''and ocean'' after ''weather''; and

(II) by striking ''and harmful algal bloom forecasting'' and inserting ''harmful algal bloom forecasting, and resource and coastal management'';

(3) in subsection (d)(1), by adding a period at the end; and

(4) by striking ''the Council'' each place it appears and inserting ''the Ocean Policy Committee''.

SEC. 1005. REPORT TO CONGRESS.

Section 12307 of the Integrated Coastal and Ocean Observation System Act of 2009 (33 U.S.C. 3606) is amended—

(1) in subsection (b)—

(A) by redesignating paragraphs (8) and (9) as paragraphs (9) and (10), respectively; and

(B) by inserting after paragraph (7) the following:

''(8) a post-storm evaluation for all major storms in the United States that occurred during the year preceding the submission of the report, to assess the impact of observations of the System and other products of the System with respect to storm forecast accuracy;''; and

(2) by striking ''Council'' each place it appears and inserting ''Ocean Policy Committee''.

SEC. 1006. AUTHORIZATION OF APPROPRIATIONS.

Section 12311 of the Integrated Coastal and Ocean Observation System Act of 2009 (33 U.S.C. 3610) is amended—

(1) by striking ''There are'' and inserting the following:

''(a) IN GENERAL.—There are'';

(2) by striking ''—'' and all that follows through ''(5)'';

(3) by striking ''fiscal year 2025'' and inserting ''each of fiscal years 2027 through 2031''; and

(4) by adding at the end the following:

''(b) ALLOCATION OF FUNDS.—

''(1) IN GENERAL.—Except as provided by paragraph (2), the Secretary shall allocate not less than 7.5 percent of amounts appropriated pursuant to the authorization of appropriations under subsection (a) to each regional coastal observing system that was in existence on January 1, 2025.

''(2) EXCLUSION OF DISASTER RELIEF APPROPRIATIONS.—Paragraph (1) does not apply with respect to any amounts appropriated by an Act making supplemental appropriations for disaster relief.''.

SEC. 1007. CONFORMING AMENDMENTS.

(a) INTERAGENCY FINANCING AND AGREEMENTS.—Section 12305(b) of the Integrated Coastal and Ocean Observation System Act of 2009 (33 U.S.C. 3604(b)) is amended by striking ''the Council'' and inserting ''the Ocean Policy Committee''.

(b) PUBLIC-PRIVATE USE POLICY.—Section 12308 of the Integrated Coastal and Ocean Observation System Act of 2009 (33 U.S.C. 3607) is amended by striking ''Council'' each place it appears and inserting ''Ocean Policy Committee''.

(c) INTENT OF CONGRESS.—Section 12310 of the Integrated Coastal and Ocean Observation System Act of 2009 (33 U.S.C. 3609) is amended by striking ''the Council'' each place it appears and inserting ''the Ocean Policy Committee''.

TITLE XI—OTHER AUTHORITIES

SEC. 1101. RELOCATION ALLOWANCES.

(a) IN GENERAL.—The Under Secretary, acting through the Director of the National Weather Service, may establish an alternative or fixed rate relocation allowance for employees of the National Weather Service transferred in the interest of the Federal Government from one official station to another for permanent duty, including employees transferred to the National Weather Service from another Federal department or agency, and for the

immediate family of the employee, notwithstanding subchapter II of chapter 57 of title 5, United States Code, and any regulations prescribed under that subchapter.

(b) SERVICE AGREEMENT.—Nothing in this section shall be construed to abrogate the requirement that an employee to be afforded a relocation allowance under subsection (a) agree in writing to remain in the Government service as would otherwise be required by and under the same terms as provided in sections 5722 and 5724 of title 5, United States Code, as relevant to transfers of employees to posts of duty outside the continental United States and official stations within the continental United States, respectively.

(c) RELOCATION ALLOWANCE DEFINED.—In this section, the term ''relocation allowance'' includes any allowance authorized under section 5724, 5724a, 5726, 5727, or 5729 of title 5, United States Code.

SEC. 1102. UNFUNDED PRIORITIES LIST, REPORTS, AND PLANS.

(a) DEFINITIONS.—In this section:

(1) APPROPRIATE COMMITTEES OF CONGRESS.—The term ''appropriate committees of Congress'' means—

(A) the Committee on Natural Resources of the House of Representatives;

(B) the Committee on Science, Space, and Technology of the House of Representatives;

(C) the Committee on Appropriations of the House of Representatives;

(D) the Committee on Commerce, Science, and Transportation of the Senate; and

(E) the Committee on Appropriations of the Senate.

(2) CAPITAL BUDGETARY LINE ITEM.—The term ''capital budgetary line item'' means a line item in the budget justification materials submitted to Congress in support of the budget of the President for a fiscal year pursuant to section 1105 of title 31, United States Code, for any aircraft or vessel for the National Oceanic and Atmospheric Administration valued at more than $3,000,000.

(3) INFRASTRUCTURE AND ASSETS.—The term ''infrastructure and assets'' means—

(A) repair and construction of infrastructure, facilities, and laboratories;

(B) instrumentation;

(C) resources for data storage and analysis, including options for cloud-based and supercomputing services; and

(D) with respect to the Office of Marine and Aviation Operations, aircraft, vessels, and uncrewed systems, associated facility construction and repair needs, instrumentation, and requirements to operate new and existing assets to reliably meet the mission needs of the National Oceanic and Atmospheric Administration.

(4) UNFUNDED PRIORITY.—The term ''unfunded priority'' means a program or mission requirement that—

(A) has not been selected for funding in the applicable proposed budget;

(B) is necessary to fulfill a statutory or mission requirement; and

(C) the Under Secretary would have recommended for inclusion in the applicable proposed budget had additional resources been available or had the requirement emerged before the budget was submitted.

(b) UNFUNDED PRIORITIES LIST.—

(1) IN GENERAL.—Not later than 15 days after the date on which the President submits to Congress the budget of the President for a fiscal year pursuant to section 1105 of title 31, United States Code, the Under Secretary, in consultation with the Assist-

ant Administrator for each line office of the National Oceanic and Atmospheric Administration, shall submit to the appropriate committees of Congress a report that includes a list of unfunded priorities of the Administration.

(2) INCLUSIONS.—The list required by paragraph (1) shall include unfunded priorities related to the needs of the National Oceanic and Atmospheric Administration—

(A) to meet statutory and mission requirements to—

(i) protect human life, property, and the economy from the impacts of weather and water;

(ii) manage the Nation's fisheries and ocean, coastal, and Great Lakes resources; and

(iii) manage, steward, and make improvements to data storage, accessibility, interoperability, and utilization;

(B) with respect to infrastructure and assets to meet statutory and mission requirements, including—

(i) needs with respect to—

(I) repair and construction of infrastructure, facilities, and laboratories;

(II) scientific support equipment and instrumentation; and

(III) resources for data storage and analysis, including options for cloud-based and supercomputing services; and

(ii) with respect to the Office of Marine and Aviation Operations, in coordination with the Assistant Administrator for Marine and Aviation Operations, needs with respect to aircraft and vessels, associated facility construction and repair needs, and resources required to operate new and existing assets;

(C) with respect to operational shortfalls that compromise the ability of the National Oceanic and Atmospheric Administration to meet the statutory and mission requirements described in subparagraph (A), including by compromising the ability of the Administration to meet those requirements in a timely manner;

(D) with respect to mitigating fishery disasters, including in accordance with the requirements under the heading ''FISHERIES DISASTER ASSISTANCE'' in title II of the Disaster Relief Supplemental Appropriations Act, 2023 (division N of Public Law 117–328; 136 Stat. 5205); and

(E) with respect to transitioning successful experimental programs under the Office of Oceanic and Atmospheric Research as of the date of the enactment of this Act into an operational capacity under another office of the National Oceanic and Atmospheric Administration.

(3) PRIORITIZATION.—The list required by paragraph (1) shall—

(A) present the unfunded priorities of the National Oceanic and Atmospheric Administration in order from highest to lowest priority, as determined by the Under Secretary; and

(B) with respect to each unfunded priority, include—

(i) a brief description of the unfunded priority and its relationship to the statutory and mission requirements of the Na-

tional Oceanic and Atmospheric Administration;

(ii) an estimate of the funding level required; and

(iii) an assessment of the status of the design or acquisition program, if applicable.

(c) STOCK ASSESSMENTS AND SURVEYS.—

(1) PLANNED STOCK ASSESSMENTS AND SURVEYS.—Not later than February 1 of each year, the Under Secretary, in consultation with the Assistant Administrator for Marine and Aviation Operations and the Assistant Administrator for the National Marine Fisheries Service, shall make available on a publicly accessible website a list of planned stock assessments and surveys for the upcoming fiscal year.

(2) PRIORITY STOCK ASSESSMENTS IN UNFUNDED PRIORITIES LIST.—The list required by subsection (b)(1) shall include priority stock assessments described in subparagraph (B)(ii) of section 304(e)(1) of the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1854(e)(1)), as added by paragraph (3), that are unfunded priorities.

(3) DATA-POOR STOCKS.—Section 304(e)(1) of the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1854(e)(1)) is amended—

(A) by inserting ''(A)'' after ''(1)''; and

(B) by adding at the end the following:

''(B) The report required by subparagraph (A) shall include—

''(i) an assessment of whether stock survey data is adequately available, not available, or not sufficiently available;

''(ii) priority stock assessments and surveys conducted for the purpose of—

''(I) significantly decreasing uncertainty in stock assessments;

''(II) maintaining continuity of data for species management; or

''(III) increasing the ability of the National Oceanic and Atmospheric Administration to meet the statutory and mission requirements described in section 1102(b)(2)(A) of the Weather Research and Forecasting Innovation Reauthorization Act of 2026; and

"(iii) for the priority stock assessments under clause (ii), a description of the type, resource needs, and estimated cost of increased survey efforts to meet the goals under that clause.".

(d) CAPITAL INVESTMENT PLAN.—

(1) IN GENERAL.—Not later than 60 days after the date on which the President submits to Congress the budget of the President for a fiscal year pursuant to section 1105 of title 31, United States Code, the Under Secretary, in consultation with the Assistant Administrators for the line offices of the National Oceanic and Atmospheric Administration, as appropriate, shall submit to the appropriate committees of Congress a future-years capital investment plan.

(2) INCLUSIONS.—The plan required by paragraph (1) shall include—

(A) the fleet replacement and modernization plan required by section 604 of the NOAA Fleet Modernization Act (33 U.S.C. 891b);

(B) the NOAA Aircraft Recapitalization Plan and any plan developed to carry out section 11708 of the Don Young Coast Guard Au-

thorization Act of 2022 (division K of Public Law 117–263; 33 U.S.C. 851 note prec.);

(C) a replacement and modernization plan of any National Oceanic and Atmospheric Administration space-based observation platforms maintained under section 301 of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8531); and

(D) any other plan the Under Secretary considers appropriate.

(3) ELEMENTS.—The plan required by paragraph (1) shall identify, for each capital budgetary line item—

(A) the proposed funding level included in the applicable proposed budget;

(B) the total estimated cost of completion;

(C) projected funding levels for each fiscal year for the next 5 fiscal years or until completion, whichever is earlier;

(D) an estimated completion date at the projected funding levels; and

(E) changes, if any, in the total estimated cost of completion or estimated completion date from previous future-years capital investment plans submitted under this subsection.

SEC. 1103. METEOROLOGICAL OBSERVATIONS IN THE ARCTIC REGION.

(a) ESTABLISHMENT OF METEOROLOGICAL OBSERVATION STATIONS IN THE ARCTIC REGION.—The Under Secretary may take such action as necessary in the development of an international basic meteorological observation network in the Arctic region of the Western Hemisphere, including the establishment, operation, and maintenance of observation stations in cooperation with the following:

(1) The Department of State and other Federal departments and agencies.

(2) The meteorological services and space-based assets of the United States and foreign countries.

(3) The commercial sector.

(4) Local communities and Indian Tribes in the Arctic region.

(5) Persons engaged in air and marine commerce.

(b) TRANSFER FROM OTHER GOVERNMENT DEPARTMENTS OF SURPLUS EQUIPMENT AND SUPPLIES FOR ARCTIC STATIONS.—Section 4 of the Act entitled ''An Act to provide basic authority for certain functions and activities of the Weather Bureau, and for other purposes'', approved June 2, 1948 (62 Stat. 286, chapter 373; 15 U.S.C. 328) is amended—

(1) by striking ''charge'' and all that follows through ''Army'' and inserting ''charge to the National Oceanic and Atmospheric Administration, the Secretary of the Army'';

(2) by striking ''are authorized'' and all that follows through ''surplus'' and inserting ''may transfer to the National Weather Service equipment and supplies that are surplus''; and

(3) by striking ''of Arctic weather stations'' and inserting ''of Arctic observation stations in the United States''.

(c) REPEAL.—The first section of the Act of February 12, 1946 (60 Stat. 4, chapter 4; 15 U.S.C. 313a), is repealed.

SEC. 1104. TRANSFER OF EXCESS PROPERTY OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION.

(a) IN GENERAL.—Notwithstanding chapter 5 of title 40, United States Code, or any other provision of law governing the disposition of excess property, the Under Secretary may, on such terms as the Under Secretary determines appropriate, transfer to another Federal department or agency the property of the National Oceanic and Atmospheric Administration (in this section referred to as the ''Administration'') that the Under Secretary has des-

ignated, in accordance with subsection (b), as excess property.

(b) DESIGNATION.—The Under Secretary shall designate, based on the assessment described in subsection (c), as excess property any on-orbit low earth orbiting or geostationary earth orbiting satellite of the Administration that has reached the end of its operational use relating to the collection of environmental data for use in weather forecast models or other scientific research.

(c) ASSESSMENT.—

(1) IN GENERAL.—In carrying out subsection (b), the Under Secretary shall conduct an assessment to determine the appropriateness of making the designation under such subsection.

(2) ELEMENTS.—In conducting the assessment under paragraph (1), the Under Secretary shall carry out the following:

(A) Evaluate the operational viability of satellites described in subsection (b) based on the following:

(i) Spacecraft health.

(ii) Sensor performance.

(iii) Fuel and lifetime margin.

(iv) Data continuity.

(v) Ground segment readiness.

(B) Assess the risk of a data-gap in the existing on-orbit satellites and any satellites in storage that have not launched as of the date of such assessment, to ensure environmental data redundancy and resilience relating to such satellites.

(d) REIMBURSEMENT.—The Under Secretary may require reimbursement from the Federal department or agency under subsection (a) to which a transfer is carried out pursuant to such subsection for the fair value of such property, as determined by the Under Secretary.

(e) USE OF FUNDS.—

(1) ESTABLISHMENT OF FUND.—There is established in the Treasury of the United States a special account for amounts collected as reimbursements under subsection (d) (referred to in this subsection as the ''Fund'').

(2) DEPOSITS.—Notwithstanding section 3302(b) of title 31, United States Code, there shall be deposited in the Fund any reimbursement received under subsection (d).

(3) USE OF FUNDS.—All amounts in the Fund shall—

(A) be available, without further appropriation, for upgrades, improvements, or repair

of existing capital assets and facilities of the National Environmental Satellite, Data, and Information Service of the Administration in order to enhance mission support and mission capabilities in addition to any other amounts that may be available for such purposes; and

(B) remain available until expended.

(4) REPORT ON FUNDS.—The Under Secretary shall submit to Congress, as part of the annual President's budget request, a report detailing the availability and use of funds, including information relating to any upgrades, improvements, or repairs of existing capital assets and facilities referred to in paragraph (3)(A), received under subsection (d).

(f) CONGRESSIONAL NOTIFICATION.—Not later than 60 days before a transfer under this section, the Under Secretary shall notify the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate in writing of plans relating to such a transfer. Such notification shall include the assessment conducted under subsection (c).

(g) REPORT.—Not later than 180 days after the date of the enactment of this Act, the Comptroller General of the United States 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 evaluating the Administration's authorities, policies, and Federal Government-wide policies related to transferring any portion of the excess property designated in accordance with subsection (b) operated by the Administration to any other Federal department or agency, which shall include—

(1) a description of the process for decommissioning an Administration satellite, any existing agreements related to transfers of such satellites, whether decommissioned or not as of the date of any such agreement, and any reimbursable agreements related to such transfers under subsection (d); and

(2) a summary of any Administration plans for potential transfer of existing or future satellites described in such subsection operated by the Administration to any other Federal department or agency.

SEC. 1105. MISCELLANEOUS AUTHORITIES.

(a) TECHNICAL ASSISTANCE IN THE PACIFIC.—

(1) IN GENERAL.—Subject to the availability of appropriations, and at the discretion of the Secretary of Commerce, in consultation with the Secretary of State, the Under Secretary may provide to Pacific Island parties technical assistance and serv-

ices in line with the mission of the National Oceanic and Atmospheric Administration.

(2) REGIONAL CAPACITY.—

(A) USE OF EXISTING PROGRAMS, OFFICES, AND SITES.—To implement this subsection, the Under Secretary shall primarily use existing programs, offices, and sites of the National Oceanic and Atmospheric Administration in the Pacific Islands region.

(B) COOPERATIVE INSTITUTE.—In order to further augment existing regional capacity in the Pacific Islands region, the Under Secretary may consider the formation of a cooperative institute to focus and advise on the unique needs of that region.

(3) PACIFIC ISLAND PARTIES DEFINED.—In this subsection, the term ''Pacific Island parties'' means—

(A) the Trust Territories of the Pacific Islands;

(B) the Republic of Palau, the Republic of the Marshall Islands, and the Federated States of Micronesia, which have each entered into a Compact of Free Association with the United States; and

(C) such other parties as the Under Secretary considers appropriate.

(b) STATE ASSISTANCE.—The Under Secretary may provide technical assistance, data, and operational products or services in support of State governments, or entities and institutions partnering or collaborating with State governments, in the voluntary production of relevant State assessments.

(c) INTERNATIONAL COLLABORATION.—

(1) IN GENERAL.—The Under Secretary, acting through the Director of the National Weather Service, may establish and maintain partnerships and other relationships with national and regional weather services around the world to support the co-development and deployment of meteorological information and instrumentation.

(2) EXISTING AGREEMENTS AND PARTNERSHIPS.—Partnerships and other relationships established and maintained under paragraph (1), including those provided by the international desks of the National Centers for Environmental Prediction, shall build upon existing agreements and partnerships with the Department of State, other relevant Federal departments or agencies, and the World Meteorological Organization.

(d) AUTHORITY TO PAY CERTAIN MEETING EXPENSES.—Notwithstanding section 1345 of title 31, United States Code, the Under Secretary may, subject to the availability of appropriations, incur reasonable subsistence expenses directly related to hosting a meeting or conference in the United States, excluding expenses related to travel, transportation, lodging, and per diem for non-Federal employees.

(e) SERVICE MODERNIZATION.—The Under Secretary shall ensure that data, services, and products of the National Oceanic and Atmospheric Administration comply with the 21st Century Integrated Digital Experience Act (Public Law 115–336; 44 U.S.C. 3501 note) to increase the utility of and access to data, services, and products of the National Oceanic and Atmospheric Administration.

(f) BRIEFING.—Not later than 1 year after the date of enactment of this Act, the Under Secretary shall provide to the Committee on Science, Space, and Technology and the Committee on Natural Resources of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a briefing on the topic, number, and time commitment of intra-agency and interagency meetings, councils, boards, and summits attended by each line office Assistant Administrator and

Deputy Administrator of the National Oceanic and Atmospheric Administration.